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The Psychology of Occupations

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Preface

This book is intended for upper-class college students in programs in vocational guidance, counseling, and clinical psychology. It presupposes on the part of the student some knowledge of basic psychological principles and of psychological test procedures. The book structures the broad field of the relations between occupation and other aspects of life in a search for a general pattern and for basic principles. The data cited have come from a number of different sorts of research, but chiefly from the fields of vocational guidance, personnel selection, and industrial psychology, with some contributions from clinical psychology.

The problems discussed here have traditionally been nearer to counseling and to vocational guidance than they have been to clinical psychology, but these specialties are coming closer and closer together in their principles and in many of their practices. It is clear, however, that this book is closer to counseling than it is to clinical psychology, and it might therefore more properly have been written by a counselor than by me. However, no counselor has so far undertaken to write such a book. I have because I needed such a book myself, because the pursuit of my own research interests required that I make such a survey as this before proceeding further with the specific problems that concern me.

I am here, then, examining some problems which lie between fields and which are important for several of them. Because of my background there are special features of emphasis and point of view which are distinctly those of a clinician. The greater part of my professional life has been spent in research with normal adults, and of late I have concentrated upon the relations between vocation and personality in highly specialized groups. I have become more and more convinced that the role of the occupation in the life of the individual has much broader psychological importance than has been generally appreciated. I believe that psychological theory could profit greatly from study of the kinds of satisfactions that can be found in work. This is as true for developmental psychology as it is for motivational theory. The greater part of an adult's life is devoted to his occupation, and yet normative psychological theory, no less than therapy, has ignored the implications of occupational choice and satisfaction. If one wishes to understand the total psychology of any person, it is at least as important to understand his occupational behavior as it is to understand his sexual behavior. (They are not unrelated.) It is worth considering that we can get a broader sample of occupational behavior if only because there is more of it. The fact is, of course, that one can start with any facet of human behavior and work through it to the "total personality."

Because my intent was, if possible, to get beyond description of the relevant data into some interpretation of their significance for normal life, I needed a formula for organizing the data and a theoretical structure into which to fit them. I hardly need to mention the lack of a consensus in personality theory. To examine the validity of personality theories as such is beyond the scope of this book. What was needed was a theory that had some relevance to or value for the problems on which we are engaged. For this purpose I have chosen to make use of Maslow's theory. It is admittedly one of the less well-known theories, but apart from my own personal preferences it has definite advantages for the task in hand.* I have not attempted to present other theories or to explain in detail why I selected this one for my purposes, and not another. An adequate discussion of these points would not only be very long; it is basically irrelevant to the purpose of the book. This use of theory has not affected the selection of the data—I have generally just included all I could find that were competent and relevant—nor materially altered the manner of presentation. The reader can interpret the data in accordance with any theory that appeals to him. Presentation of the data is, however, affected by the occupational classification devised, although, again, selection is not.

Within limits, occupational choice can be taken as a self-categorization, as an indication of at least some aspects of the self-image. Occupations may be sounder as taxonomic labels than any that we are currently working with in psychopathology. The dynamics of this self-classification are what we are exploring here. A technical taxonomic problem immediately presents itself. One cannot just discuss occupations individually. Some sort of ordering is required. How broad or narrow shall the classes be? On what criterion shall they be based? There are a number of classifications of occupations, many of them relatively satisfactory, but none of them suited to the immediate purpose. Hence I devised a two-way classification which makes possible an overview both general and precise.

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* Use of a theory in this way should not be taken to suggest unqualified acceptance of it and rejection of all other theories. In fact, other theories are clearly more useful for other purposes.

This construction of a new classification suggests a certain temerity on my part; in actual fact it was a sheer logical necessity. This classification was presented at the 1954 meeting of the Eastern Psychological Association and was subsequently published in the hope that it would be critically reviewed by others who know much more about specific occupations than I do. During the winter of 1954–1955, a group working on the Career Pattern Study under Dr. Donald Super, and with the help of Dr. Albert Thompson, did make a thorough, critical study of the classification. They found certain difficulties in its application and have made a carefully considered revision. They retained the basic idea of the two-way classification, for Level and Focus, but made some major and some minor modifications in the details. With most of these I am fully in accord, and I consider their revision a great improvement. It is this revision of my original classification which appears here. I consider it most fortunate that their careful and painstaking work was completed before this book went to press, and that they were generous enough to share their results with me immediately. I have had most helpful and stimulating discussions with this group and want here to record my debt to its members: Helen Moser, William Dubin, and Irving Shelsky.

A two-way classification permits an overview of the entire field which is extremely illuminating when one examines what is known about personality and intellectual and social factors in persons with different occupations. It also makes possible an organization of future research to fill in the more obvious gaps in our knowledge which have thus become painfully apparent.

Although a few more recent papers have been noted, no attempt has been made to cover the literature since the fall of 1954. Reference data appear at the end of each chapter.

ANNE ROE

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PART I

The Roles of Occupations

1. The Role of Occupations in Society
2. Occupations in Three Societies
3. The Role of the Occupation in the Life of the Individual

CHAPTER 1

The Role of Occupations in Society

OCCUPATION is defined by the American College Dictionary as "One's habitual employment; business, trade or calling," and by Shartle as "A group of similar jobs found in several establishments." These are typical definitions, but indicate an institutional orientation quite different from that taken here. In this book we shall use the word somewhat more broadly, to mean whatever an adult spends most of his time doing. That may be what he does to earn a living or it may not. It may be a hobby, or it may refer to duties of one sort or another, paid or unpaid. Being a housewife, in this sense, is an occupation; so is being a mother. Being a father is not an occupation in this sense because it almost never happens that it occupies the major part of a man's time, or that it is the central focus of his activities. Stamp-collecting can be an occupation, and so can following the races. The occupation, then, is the major focus of a person's activities, and usually of his thoughts.

In Chapter 3 we shall discuss what the occupation can mean to the individual who follows it. In the first chapter we want to get some general perspective on the social functions of occupations, to see what kinds of occupational divisions are characteristic of all or most societies, and how societies differ in this respect. It will then be easier to see how the individual's occupational role fits into the pattern of his own culture.

DIVISION OF LABOR IN SOCIETIES

Primary divisions

Man is a social animal. He may live as part of a family group, only loosely integrated into a larger group, or he may live as one of a nation of millions of people, or at any stage in between. But with only rare, and usually pathological exceptions, he does not live alone.

There is no place on earth, even in the South Seas, where life can be maintained without some work. Food must at least be gathered and prepared. Some shelter is needed. In every society known to us, even the simplest and most primitive, there is some division of labor. Every society distinguishes at the very least between men's and women's work, and most also recognize some subdivision (usually within the sex groups) on the basis of age. These are the primary, minimal divisions, but in most societies division of labor is carried far beyond this. However far division of labor is carried, these primary divisions remain. In our own society, for example, there are no women who work as locomotive engineers, and very few men are trained nurses. There are few occupations which are completely limited to one sex, yet most of them have unequal proportions of men and women. We also have age restrictions. In part these are due to training and experience requirements, but there is also some tendency to believe that the older person is more likely to be reliable, at least until the age of 65 or 70.

This division of labor by age-sex categories affects the great majority of activities and occupations. It means not only that members of one or a small number of age-sex groups may or must perform certain activities, but also that others usually may not. Although this specification of activities appropriate to each sex is much clearer in nonliterate societies than in our own, even there the lines are not always rigidly adhered to. For example, if a man or woman is ill, the spouse can and will take over the essential activities of the other.

In certain highly specialized activities, membership in a particular age-sex category may be prerequisite to full functioning in the activity. For example, although young men may function as medicine men, only middle-aged or older men are usually regarded as fully reliable. A similar attitude is common in our own society with regard to the members of most professions.

Although age-sex divisions are characteristic of all societies, the particular activities ascribed to men and women are by no means always the same. It is generally true that the more energetic and exciting occupations are assigned to the men, and the more routine and monotonous ones to the women, but this is not necessarily so. Whatever the division in any one society, however, usually the work done by one sex complements that of the other. In modern technological societies, this is still true in a limited sense. The household functions of women remain whatever else they do.

In all societies sex differentiation begins very early in life, and is carried on consistently through all age stages.

Secondary divisions

In every society there are secondary divisions, based on factors other than those of age and sex which are not derived for or from occupational categories, but which directly limit the number and kinds of occupations open to any given individual. This is true even in our own society where freedom of choice of an occupation is relatively great. These secondary divisions include family membership, caste divisions, and minority positions generally.

Perhaps the most universal of these limitations is family membership, either biological or social. Hereditary leadership positions (whether for supernatural or other functions) are not common among the most primitive groups, but they become increasingly the rule and are present in all groups today, not only in the obvious form of royal or "the best" families but also in less apparent yet effective ways.

In many cultures it is common for special skills of various types to be handed down within the family. This does not usually mean that every member of the family (or every male or every female) will necessarily follow that particular occupation, or that no others in the society may, although this is possible. It may happen if the particular skill is jealously guarded as part of the family's possessions. We have an example of this sort of thing in our own society in the production of a condiment (Tabasco) for which the formula is a carefully guarded family secret. The usual situation is less rigid, and it is more a matter of tradition and opportunity. This, too, is often the case in our own society, where it is not uncommon for many members of one family to follow the same or related professions.

An extension of this situation occurs in societies which have caste subdivisions. Membership in the caste is ordinarily hereditary, but the total number of castes is usually few, and within each a number of occupations may be followed which are proscribed to members of other castes.

Societies without definite caste divisions nevertheless usually include minority groups of one sort or another. Persons living within the territorial boundaries of a society other than their native one are likely to have the social position of minority group members, whether their residence is forced (as slaves) or voluntary. Other groups may be set apart because they have religious beliefs or practices different from those of the majority. It is very common for minority group position to be accompanied by limitations upon choice of occupation of the members of the group. That such discrimination has been widely practiced in the United States is evidenced by the federal and state laws forbidding it.

These limitations may be openly or implicitly imposed by the majority group, as when members of particular ethnic or religious groups are denied entrance to some occupations or required to follow others. The limitation may be a total one, applying to all members of the minority group, or it may be a proportional one, with entrance into the occupation extremely difficult but permitted to a few of the minority group.

Limitations upon occupational choice may also come from within the minority group itself. This can happen when the group perceives certain occupations as safer, in the sense of being likely to arouse little hostility in members of the majority group. Or, conversely, the minority group may encourage its members to try to follow status-giving occupations in an attempt to alter the position of the group as a whole. In another way, minority group status may come about as a result of the occupation. The role of the traveling merchant in the Middle Ages is a good example.

Occupational divisions

The primary and secondary divisions of society already discussed may prescribe only one possible occupation for certain individuals in the group. Usually, however, they function rather to limit the number and kinds of things each individual may do, but permit some selection within these limitations.

As societies become more complex, the forms of specialization and the numbers of specialists increase, until they reach a peak in such civilizations as our own. Almost all societies set aside certain persons as intermediaries between man and the supernatural, and as leaders whose function it is to organize and direct particular aspects of communal living. In the most primitive societies, leadership in either supernatural or other activities is not a full-time occupation in the sense that the leader's needs for shelter and food are fully provided for by others in the group and that his entire time is devoted to his specific duties. Nor are other specialties full-time occupations. It is only in the most complex societies that the specialist does not also directly provide at least some of his own food and shelter.

The wide variations in the numbers and importance of specialty occupations will be exemplified in the next chapter, in which several different societies are discussed. In the most primitive societies, the only essential occupations are those concerned with the gathering of food, with minimal provisions for shelter, and with minimal leadership.

Craft specialization cannot develop in any society unless life can be maintained without exhausting all the energies of the group. Some energy must remain for other activities. In addition, population size is clearly a factor. In cultures with very simple technologies there is no real craft specialization, although obviously there will be individual differences in the skill with which these technologies are applied. The commonest specializations are pottery, basketry, wood-carving, weaving, and, particularly throughout Africa, iron-working. Masons and carpenters, and makers of weapons and jewelry also became specialized early.

In many places, and at many times, specialists became more or less tightly organized into craft guilds. In many societies these have played an important role, as they did in medieval Europe and as they do now among the Nigerian Nupe. In our own society such organizations are common. Every profession has its professional society. The skilled crafts are no longer organized into societies which cut across industry lines, except through craft unions. The role of craft unions is very different from that of the medieval guilds although it derives from it.

Cooperation

In most nonliterate societies a striking aspect of the over-all labor pattern is the number and extent of cooperative activities. These are engaged in by groups of all sizes, and any kind of task may be involved. Cooperative activity extends far beyond the simple sharing of hunting, fishing, and grazing grounds, and of mutual defense activities. It goes beyond the joint activity of a whole tribe, men, women, and children, in poisoning a stream and collecting the fish. It extends to voluntary (usually), temporary association of a group of men and women for a specific, limited task. This may be the clearing of a field for one of them, the cultivation of a garden, the building of a house. In the usual arrangement, the workers are provided with food (and drink) by the one for whom the work is done, and in turn he will join in cooperative labor for others. In most societies group pressures are sufficient to guarantee a reasonably fair contribution from each person. The man who shirks will not find help easily when he needs it himself.

Similar forms of cooperation were common among the early settlers throughout our own country, and here, too, they had a social as well as an economic function. At a barn-raising or a husking-bee the proprietor was expected to provide refreshments. There is a tale of a stingy New England deacon whose neighbors struck at his barn-raising when the expected refreshments were not forthcoming. The deacon finally produced a cask of rum, whereupon the work went merrily on.

Occupations and social status

Individual differences in essential skills, or in the wholeheartedness with which essential activities were pursued, must have been apparent and noted in the earliest societies. Some food-gatherers, some hunters, some fishers would be more successful than others. The less successful or the younger members of the group would tend to try to imitate or to learn from these more successful ones. Prestige and status would accrue to the sucessful ones. The common custom of according special prestige and status to older members of the group just because of their age may well be a natural development of this. As activities became more specialized, certain ones acquired more importance and conferred more prestige and status than others. In general, leadership activities, whether of natural or supernatural concerns of the group, tended to put the leaders into positions of special prestige. Where leadership became in any way hereditary, families would at first share and then confer this prestige. Apart from this, it seems to have been the general rule in primitive societies, as in our own, that, the more difficult and the more abstruse the activity, and the more personal autonomy involved, the more prestige and status were associated with it. All societies have the problem of who is to do the work that is dull, routine, and dirty. However the assignments are made, this type of work is always of low status.

In addition, there have been few societies where prestige did not accompany wealth. In this aspect, societies differ chiefly not in their attitudes towards wealth, but in how many and what other avenues to high status are open. The occupations of men in Tonga, for example, were listed by an early traveler, according to rank, as follows:

Canoe builders
Cutters of whale teeth
Funeral directors
Stonemasons
Net-makers
Fishermen
Large house-builders
Tattooers
Club-carvers
Barbers
Cooks
Peasants

Occupations of tattooers, club-carvers, and barbers might or might not be hereditary, but all the others were hereditary (Herskovits).

The relationship between occupation and social status in our own culture is becoming clarified as a result of more recent studies. Occupation of father is widely accepted as the most usable single index of the social and economic status of all the members of a family. There is some indication that the younger the child the less important the father's position is for the child's status. Centers believes that

> A person's status and role with respect to the economic processes of society imposes upon him certain attitudes, values and interests relating to his role and status in the political and economic sphere . . . the status and role of the individual in relation to the means of production and exchange of goods and services gives rise in him to a consciousness of membership in some social class which shares those attitudes, values and interests. . . . A man's way of getting his livelihood dominates much of his waking life, and it is out of the forces acting upon him in this economic sphere that class consciousness has been seen to emerge. That it structures itself primarily around the economic self-interest born of status and role and the forces of economic circumstance is a wholly reasonable discovery.

In a small, midwestern town, homogeneous for religion, race, and nationality, Bell found that social distinctions were denied, but were nevertheless apparent. These were based mainly upon occupational levels, with performance in the community a further factor. He reports the following hierarchy:

1. Bankers and their associates.
2. Businessmen: owners and managers, all types.
   Long-term employees.
   Recently, the doctor and dentist.
3. Landowners, active or retired (almost at level of 2).
4. Farm renters.
5. Odd-job workers.

These rankings applied to adults only. Children were on their own; all would be helped if they were hard-working and saving. Married women took their husbands' positions. Those who worked between graduation and marriage were more highly regarded. Boys who worked elsewhere outranked boys working in town and boys working for their parents. Teachers and ministers were considered outsiders and subjected to the criticism directed at all newcomers.

More detailed studies of occupations and prestige are discussed in Chapter 23.

DIVISION OF LABOR BETWEEN SOCIETIES

In addition to the division of labor among different members of one society, there may be a division of activities between societies. In this kind of specialization, an entire group produces some commodity not made by its neighbors. This is frequently the result of the distribution of different natural resources, some being available to one group and some to another. A pertinent modern example is the production of uranium. However, such specialization may be brought about in other ways. One group may develop a technique first and remain more skilled in it; those possessing the skills in one group may die without replacements; one group may produce a commodity more cheaply than another. In northern South America, for example, one tribe builds canoes, another weaves hammocks, a third supplies both its neighbors with cotton, and still another tribe manufactures curare (a poison which is put on the tips of arrows and darts for more effective hunting).

Trading, which may have started as individual trading among peripheral members of different societies, has, even in relatively primitive groups, been quite widely developed. In the African tribes, for example, there are professional middlemen. Barter has usually been the mode of exchange, but there are many instances of deferred credit as an established form. Such variations, fascinating as they are, are beyond the scope of this book.

We may wonder how it happens that the species man has developed such elaborate styles of living, when the most primitive men had of necessity at least the skills necessary for the preservation of individual life and of the group. Culture is a uniquely human invention and must have arisen out of uniquely human characteristics. We may get some hint of what these characteristics are when we discuss the role of the occupation in the life of the individual.

Herskovits remarks that nonliterate peoples are like us in that they do as much work as they have to in order to meet the basic demands of making a living, but that they also do as much more as they must in order to achieve any other ends that seem desirable to them. It must be these other ends which hold the cue to the development of the structures of civilization.

Nonliterate people differ from us, however, in being able to take their ease at their own pleasure. This privilege is one that is held by very few in a machine-age economy. It is practically limited to the few independent workers, and they are mostly in the creative groups. These are, in fact, more likely to work a 60-hour or 80-hour week than are more regimented workers now, but to be able to pick the hours or days or weeks they work is a major satisfaction.

Study of how men and women occupy their time when they have some choice in the matter can tell us much more about men and women themselves than has been realized. This becomes more and more clear as we appreciate how great a role the occupation plays in the satisfactions and dissatisfactions of an individual life, and how far a culture can develop when occupational restrictions are minimal and society can encourage the widest variety of occupations, letting each member of the group find his own preferred niche.

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CHAPTER 2

Occupations in Three Societies

In this chapter we shall examine very briefly three different modern societies. These have been selected to illustrate different levels of occupational stratification, from the simplest to the most complex. Although there have been many studies of societies, they have not been made with a primary view to investigation of the role of occupations in the society, and any occupational census is rare. The gap between the second and third groups discussed in this chapter is very great, but pertinent data for societies of intermediate level are not available.

The first group are the Arunta of Australia. Their culture is among the most primitive still extant, but even they have been enormously affected by changes in this century. There is, however, a long and authentic study of them which was begun in 1896, and it is from this that the data given here are taken (Spencer and Gillen). At that time, their way of life had as yet been changed very little as a result of the white settlement of Australia.

The second group are the Aymará of Peru. These people have been extensively studied by Tschopik. They show some occupational specialization, and an occupational census for the group is available.

The third group is an American community to which the pseudonym of Middletown was given by the Lynds, who studied them in 1924 and again in 1939. Since then things have changed greatly in Middletown, but the earlier study particularly gives us background for our attempt to understand the occupational situation in American communities today.

THE ARUNTA OF AUSTRALIA

The Arunta are Australian aborigines. In 1896 there were only about 2,000 of them in all, and they were divided into a large number of small local groups. Each group occupied a given area, and was usually called by the name of an animal or a plant. At the time of the original study special attention was paid to the group living at Alice Springs. They were known as the "witchetty grub" people, and numbered exactly 40 individuals. Alice Springs is in central Australia, in the middle of a vast, stony desert. The climate is hot and dry, and water and vegetation are sparse.

The primary group is the family, consisting of a man and one or more wives and children. Under usual conditions, each local group consists of one or two families. This may be, for example, two or more brothers with their wives and children. They are always accompanied by dogs. These small parties are to be found wandering over the land which they own, and camping at favorite spots where there is water, and where animal and vegetable food can be found. They make no attempt at cultivation but live entirely upon what they find in the bush. Everything edible is eaten, and their concept of what is edible is very broad. It includes, for example, grubs, flies, and pounded ant-hill clay. They store no food, except for a few days in preparation for a ceremony. They have no domestic animals (except the dogs which are not considered food), but it must be said that such animals as are found in Australia, the kangaroos, the wallabys, and so on, may not be particularly adaptable for domestication.

When food is abundant, everyone feasts. When it is scarce, everyone goes hungry. If there is lots of food, the entire group spends its days lounging about, laughing, and playing. When food is wanted the women and children go out with digging sticks, with which they get small burrowing animals such as lizards or small marsupials. The men go after larger game, stalking emus and kangaroos. They may hunt individually or in small parties, but food is shared within the total group. Weapons are spears, spear-throwers, boomerangs, and shields. Sometimes a water-hole is poisoned with the leaves of the pituri plant which will stupefy the game, making them easy to catch.

Their most standard vegetable diet is the seeds of a species of *Claytonia.* These are winnowed, ground, mixed with water, eaten raw, or baked in the ashes. Acacia pods may be roasted over the ashes and the seeds shelled out and eaten. Animals are cooked in pits in the ground.

It seems never to have occurred to them to devise any form of clothing as a protection against the cold, which during the winter months may be severe. Nor do they have very effective shelters. They may make a lean-to of shrubs, placed to shield the occupants from the prevailing wind, and in front of this build a small fire of twigs. This serves as the family hearth, where the cooking is done and around which they sit and talk. In addition, on very cold nights, there will be a small fire between each two persons, with a supply of small wood handy to replenish it if anyone wakes. The women's chief ornaments are neck rings, usually of human hair, which are made for them by their sons-in-law. The men wear waist belts of human hair, usually provided by their mothers-in-law, forehead bands, and neck rings similar to those of the women. The men may also wear a nose-bone ornament, and perhaps a tuft of feathers in the hair, which is greased and stiff with red ochre; they may wear a small pubic tassel which is more eye-catching than concealing.

The women weave bags out of string made of fur or vegetable fibers. Bags of grass rushes or of split cane may be closely enough woven to carry honey but not water; they have nothing in which water or food can be heated. The women always have a *pitchi* which is a wooden trough, about 1 to 3 feet in length, usually hollowed out of the bean tree. This can serve to transport food material, water, or a baby, and is carried on the head or slung to one hip by a strand of hair or a fur string. Their digging sticks are just straight staffs of wood, bluntly pointed at one or both ends, and short enough to be easily carried.

The men have shields made of the wood of the bean tree. Their spears, 10 feet or less in length, are made of *Tecoma* wood, and the tip is of a piece of *mulga* spliced onto the body with tendon. The spear-thrower is a hollowed-out piece of *mulga* from 2 to 2½ feet long, with one end tapered to a narrow handle and the other more suddenly to a blunt point. A short, sharp bit of hard wood is attached to this point by a tendon, and this fits into a hole at the end of the spear. At the handle end is a lump of resin, and into it is usually fixed a piece of sharp-edged flint or quartzite. This is the most important cutting weapon that they have. The men may also carry a small wallet, made of part of the skin of some animal, or of short strips of bark tied around with fur string. Except for a *Churinga,* they have no other possessions.

A *Churinga* is a ceremonial object, and every adult has his own. They are usually of wood, but men may have them made of stone, and they may possess additional ones by inheritance, although women may not. The group as a whole also owns other ceremonial objects.

Different local groups seem to have specialized in making various of these weapons and implements, perhaps because some of the materials, such as the bean tree, are of limited occurrence. The degree and extent of organized barter is amazing in groups of such limited resources and technology. It is not clearly stated in the report, but apparently all the men in the tribe engage in making the particular objects for barter, and it has been recorded that any work they do is normally done well, and they take pride in their craftsmanship.

Young boys go with the women and the girls on food-gathering expeditions but soon follow the pattern of the men. Except for leadership functions the only differentiation of activities is a primary one, on the basis of age-sex categories. Within these categories, all members of the group do the same things with regard to the basic needs of living.

Each group, however has a head man, or *Inkata.* This position carries only a modicum of authority; it is hereditary within certain limits. If a head man dies without a son old enough to succeed him, his brother succeeds, but is in turn followed by the first one's son.

Each group may also have a medicine man, or an *Irunkarinia* man who has a special power of communicating with the spirits. Anyone may attempt to become a medicine man, even women, although this is unusual. Their chief function is curing by means of various rites. When a man decides to become a medicine man he goes to the mouth of a particular cave and sleeps there. Here one of the spirits pierces his tongue with an invisible lance, leaving a real hole which is large enough to admit the little finger. After several days of retirement, he reappears in his group. He may act and look somewhat oddly. Finally one morning he paints a broad band across the bridge of his nose, and then everyone knows that there is a new medicine man. After a year, and provided that his tongue hole remains open, he can practice. The chief craft of the medicine man is to give the appearance of the possession of esoteric knowledge, and to be able to hide about his person, and to produce at will, small quartz pebbles or bits of stick.

The various ceremonial rites characteristic of the group are participated in by everyone of appropriate age and sex. All in all, it is hard to imagine a less differentiated society.

THE AYMARÁ OF PERU

Overlooking Lake Titicaca in Peru, the Indian village of Chucuito is inhabited by 554 Aymará Indians and 98 Mestizos (mixed bloods). Chucuito is a very old town, and is now a poor one. There are two main plazas, with cobblestone streets, lined with high stone and adobe walls. Chucuito is in high (about 13,000 feet), cold, semi-desert country, with two yearly seasons, rainy and dry. The soil is generally poor, the climate severe and capricious, and living conditions extremely unhygienic. Subsistence is based on farming, supplemented somewhat by livestock and by fishing. Except for the period after the harvest, food is always very scarce.

All able-bodied Aymará, men and women, rich and poor, work in the fields, and the children help as soon as they are able to do so. There is sex division of the field labor. The men clear the land, plow, spread fertilizer, thresh and winnow, and the women plant and sow. Weeding, cultivating, and harvesting are done by both sexes.

Most villagers have some livestock, chickens, sheep, a llama or burro, and a few have oxen or a cow. These animals are killed for food only on the most important occasions. Herding is a job for women and children; lambs and baby pigs may be herded by children under 5.

Fishing is a masculine activity, and very important in the economy of the village, although techniques for preserving fish are rudimentary and inadequate. A variety of dragnets and scoop-nets are used. Their boats are made of reeds.

Their houses are constructed of adobe, of sod blocks, or of field stones set in mud. They are mostly rectangular, about 12 by 8 feet, each a single room, and are usually arranged around two or more sides of a patio. They have pounded-earth floors, smoke-holes, no windows, and thatched roofs. Kitchens are usually separate.

Furnishings are very limited. They use stone platform beds, with reed mats for mattresses and llama pelts and woven blankets as bedding. Niches in gable ends serve for storage, and possessions and clothes are hung on pegs. Lamps are pottery bowls, with fat for fuel and a rag wick. The stoves are of pottery. The men wear homespun suits and long ponchos, the women short jackets, full skirts, and many underskirts. Both go barefoot or wear sandals made of old tires. Children wear wrap-around skirts, white for males, red for females. Both sexes have wide shawls, which are also used for carrying.

The Mestizos form the aristocratic class of the village, hold all the important political offices, and own most of the best farm land. In addition, unlike the Indians, they speak Spanish as well as Aymará and are generally literate. A large proportion of the Aymará are directly or indirectly dependent upon the Mestizos (40 per cent are sharecroppers), and relations between the two groups are uneasy and mutually derogatory. The Mestizos are culturally a group apart, and for the rest of this account we shall be concerned only with the Aymará.

At present land-holding is very confused in Chucuito. Traditionally the basic unit of social organization was the extended patrilineal family (i.e., based on descent in the paternal line), normally composed of the head man, his brothers, their wives, sons, and unmarried daughters. This family held its lands jointly, and farming was a cooperative enterprise. Since the middle of the nineteenth century, legislation designed to dissolve community ownership has broken up the fields and land-holdings, and now the monogamous, biological family is more characteristic of Chucuito. The result has been great disruption of community patterns, and as yet no well-formulated new ones.

Adulthood is considered to be attained with marriage, but marriages are very unstable and divorce easy and frequent. Economic independence, however, often must wait for the death of the parents because of the present reduced land-holdings, and the carry-over of the old tradition of extreme paternal dominance.

The occupations of the adults listed in Table 2.1 are their major ones; a few have several occupations. Most of the specific occupations are followed by men only, but bread-makers, weavers, and midwives may be of either sex. Spinning is done by both. Either men or women may weave on the horizontal peg loom. Men make material for clothing on a European treadle loom, but the weaving of belts is usually women's work. Although cotton is spun and woven by the Aymará, none of this is now done at Chucuito. The hats made there are of felt, and the shoes of old tires. There is no smelting; the iron workers make only agricultural implements out of old lanterns and old auto springs. Tinsmiths are pretty well limited to old gasoline cans for their material, and one of those listed in the table confines himself to making containers of these cans.

The Aymará carry on a highly developed trade between villages, and use a great deal of magic and divination to assure the success of their trading expeditions. Fishing communities trade fish for animal and vegetable products, others trade wool, meat, and hides for fish and farm produce. Still other communities specialize in manufactures. For example, two outlying settlements near Chucuito specialize in pottery (made usually by the men), two specialize in felt hats, and one in the making of lime for use with coca. Trade is conducted only by barter, the exchange depending upon the relative abundance of the products. There are fixed market days in the town, and each sex generally barters the articles it produces, although women usually market the farm products.

Such trades as bread-making and hat-making are often carried on by all the appropriate members of one household, although there is

TABLE 2.1. OCCUPATIONS IN CHUCUITO
(Census of January, 1941)

	Male	Female	Total
Hat-makers	32		32
Bread-makers	10	9	19
Weavers	7	11	18
Fishermen (for trade)	4		4
Shoemakers	3		3
Tailors	3		3
Tinsmiths	3		3
Carpenters, house-builders	2		2
Ironsmith	1		1
Lasso and rawhide maker	1		1
Spins		1	1
Storekeeper	1		1
Mayor Domo of the church	1		1
Comisario (minor functionary)	1		1
Qolasiri[a] (doctors)	4		4
Paqo[a] (magicians)	3		3
Usuiri[a] (midwives)	1	2	3
Yatiri[a] (diviners)	2		2
	79	23	102

[a] All these professions employ some magical techniques, cure some diseases, and require some specialized training. The qolasiri cures diseases due to natural causes, as well as superficial injuries, broken bones, and sprains; he extracts intruded objects, and treats ghost sickness. The paqo cures diseases sent by spirits and demons, or by either at the instigation of a sorcerer. The usuiri is a practical obstetrician and treats diseases to which postparturient women are supposed to be particularly susceptible. The yatiri is a diviner, and although he performs no cures he is consulted in cases of illness in order to ascertain the cause (i.e., sorcery or not) and to divine the outcome. The Aymará are preoccupied with disease and with explanations for misfortune.

no rigid arrangement about it. The younger persons learn quite directly from those already skilled, with no formalities except in the magical professions. These skills are developed through a more or less formal apprenticeship, and the professions are apparently open to anyone, although in practice very few women follow them. Becoming a paqo, or magician, for example, follows this stereotyped procedure:

The first, and an essential, event is to be struck by two successive bolts of lightning. The first bolt is supposedly fatal, but the second restores life. The individual is always alone, usually in a remote spot; there is no advance preparation, such as fasting or drugs, nor any suggestion that the "experience" is deliberately sought. At some time after this, usually more than two years, the man who has been struck by lightning, and wishes to become a magician, pays a formal call upon an established practitioner, and may be accepted as an apprentice. This involves for the apprentice both the making of certain formal gifts and service in various capacities. The magician is expected to provide instruction and reciprocal services for the apprentice. The apprenticeship may last two or three years, depending on how rapidly the apprentice learns, and how much time both have to give to it.

Prestige and high status in Chucuito are primarily dependent upon wealth, and means of acquiring wealth are relatively few. Wealth means not only prestige but also security and independence of action. The practice of one of the medical or magical professions, however, also carries prestige, and knowledge and learning generally are respected. Leadership patterns are poorly developed, partly because all important offices are held by Mestizos, but even so such statuses as "dance leader" carry little prestige.

MIDDLETOWN

Middletown (as studied in 1924) has a population of over 35,000. It is primarily an industrial city. There are 3 large plants, employing 1,000 to 2,000 workers, 8 employing 300 to 1,000 workers, and many smaller ones. Glass, metal, and various automobile parts industries are dominant.

Middletown has a rather typical midwestern, small city culture which is set up to provide for the more urgent needs of the commoner personality types and functions, and it offers little for the person with different or wider interests. It is a strongly conservative city, and behavior is expected to conform to stereotyped patterns. Standard education, church-going, and respect for material success are typical elements in the pattern. Although women do work, it is still considered "better" to follow the home-maker pattern. Minority groups are relatively small. Eighty-five per cent of the city's population are native whites of native white parentage, and 7 per cent are native whites of foreign parentage. Only 6 per cent are Negroes, and 2 per cent foreign-born. There is limited public racial segregation, Negroes being admitted to the public schools but not to the larger movie houses or to the YMCA and YWCA. They are generally shunted into certain limited and less desirable types of jobs.

There are about 9,000 families in Middletown, and in nearly one-third of these more than one person is working. As in most American cities, a healthy, adult male loses caste if he is not working at a definite and categorizable job. Of the total population 15 per cent are under 6 or very old; 19 per cent are in school; 23 per cent are engaged in home-making; and 43 per cent are gainfully employed. Schooling is required of all up to the age of 14, and is usually continued at least to 16, with some civic control of employment of all under 18. Under 14, however, children may work on farms, at domestic service, or caddy outside of school hours. Of the women who are employed, 28 per cent are married, and most of these work because they must. For a woman to work from choice is not well understood in Middletown.

There are about 400 different kinds of work available in Middletown. The usual few are in professions—about 5 per cent. Skilled workers include carpenters, masons, and similar building trades workers. In industry there are machinists, millwrights, toolmakers, blacksmiths, mechanics, patternmakers, moldmakers, founders, casters, molders, forgemen, sawyers, etc.; semi-skilled operatives include filers and grinders, buffers, etc. There is no system for fitting new workers into appropriate jobs; most boys and girls obtaining their first jobs more or less fall into them. They go where friends or members of the family are working, or they follow up ads that they happen to see. Once started, it is not too easy to change. The patterns here are very like those discussed in more detail in Chapters 21 and 22.

TABLE 2.2. OCCUPATIONAL CENSUS OF MIDDLETOWN, 1920

	Men	Women
Agriculture	119	1
Extraction of minerals	34	0
Manufacturing and mechanical[a]	8,117	969
Transportation and communication	896	111
Trade[b]	1,712	469
Public service	191	2
Professional services[c]	524	368
Domestic and personal service	482	876
Clerical occupations	662	617
	12,737	3,413

[a] 6,809 of this group in industries involving foremen: these included 329 foremen and overseers; 43 technical engineers; 3 chemists; 147 managers and officials.

[b] Sales personnel, insurance agents, etc.

[c] Including: lawyers, 60 men and 1 woman; designers, draftsmen, inventors, 42 men and 3 women; 3 men chemists and 43 men technical engineers. (It is not clear from the original tables whether chemists and engineers are entered in the table twice.)

For comparison with the two societies we have studied hitherto, the census data on employment in Middletown are given in Tables 2.2 and 2.3.

TABLE 2.3. AGES OF EMPLOYED WORKERS IN MIDDLETOWN, 1920

Age	Males	Females
10–13	35	3
14–15	147	69
16–17	465	335
18–19	572	360
20–24	1,535	679
25–44	5,830	1,320
45–64	3,507	567
Over 64	600	71
?	46	9
	12,737	3,413

Of course, the difference between the numbers of occupations available in Middletown and in Chucuito is very great. This degree of occupational specialization is characteristic only of modern western civilization. It developed slowly at first, but changes have come about with greatly increased rapidity. Some idea of these changes can be gained from a study of the technical skills upon which occupational specialization depends. For example, Mumford lists the following tools and techniques as common in the tenth century:

Fires: furnaces, ovens, kilns.
Simple machines: inclined plane, screw, etc.
Thread, cord, rope.
Spinning and weaving.
Advanced agriculture. irrigation, terrace cultivation, soil regeneration.
Cattle-breeeding and use of horses for transport.
Glass-making, pottery-making, basket-making.
Mining, metallurgy, smithy, including iron.
Power machines: water-mills, boats with sails, probably windmills.
Machine tools: bow-drills and lathes.
Handicraft tools with tempered-metal cutting edges.
Paper.
Water-clocks.
Astronomy, mathematics, physics, and the tradition of science.

All else, as now exemplified in Middletown and elsewhere, has been developed in the last thousand years.

Another great difference is in the fact that in modern western civilization occupations requiring special training have increased in number, and the amount of training for the most skilled ones has become very great. The qolasiri, or doctor, of Chucuito requires an apprenticeship of some 2 or 3 years. His opposite number in modern America requires, in addition to his high school education, 8 years of formal schooling and some years of supervised practice beyond this. Nor can every one who wishes to become a doctor do so, although this is effectively the case in Chucuito. In America, as in Chucuito, however, practitioners of the healing arts stand high in prestige ratings, and relatively so in income.

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CHAPTER 3

The Role of the Occupation in the Life of the Individual

IN ORDER TO understand the role of the occupation in the life of the individual we must first have some understanding of the individual and of his needs. The old concept of economic man has proved totally inadequate to explain why men work as they do, or what it is that they are working for. That men work just to make a living is obviously not true. It is sufficient to point out that, if this were true, as soon as food and shelter had been assured, work would stop. It is not thus that man has built his civilizations. Studies of morale in industry and of job satisfaction have shown that much more is involved in and expected of a job than a pay check.

Different authors have discussed lists of needs or drives which seem to them to be involved in work in various ways. For example, Cleeton lists food; bodily well-being; activity; mating; sharing thoughts and feelings; dominance over people and elements; self-determination; achievement; approbation; and ideation.

Vernon lists as drives which he found to influence university women in selecting an occupation: social conformity; altruism, activity; independence; power; superiority; social admiration; pleasure; and ease. He adds that different drives can operate in different individuals to produce the choice of the same career, and that the same or very similar drives could result in the choice of very different careers.

Hendrick postulates a "work principle." He says that work is motivated primarily by the need for efficient use of the muscular and intellectual tools, even though the work performance may also satisfy such other needs as aggression and sex and self-preservation. His work principle states that man seeks and finds primary pleasure in the efficient use of minds and hands and tools to control or alter his environment.

Peerbolte points out that labor which is only self-preservative in character is not satisfying but that everyone needs to find some form of spiritual self-realization in his work.

These few references serve to show that it is generally accepted that the occupation plays an immensely important role in the life of the individual. There are many points of agreement among the authors just quoted, but none offers a systematic presentation of any basis for his assignment of drives and needs.

We are impelled to try to understand ourselves, and this, too, needs explanation. Some have attempted to reach understanding by atomizing human behavior, analyzing it into small categories, more or less mutually exclusive, and attempting to gain insight into one category at a time. Somehow the essential human always seems to get lost in this process.

At present there is no consensus among psychologists on the structure of a basic personality theory. Many psychologists and others have struggled with this problem, and many have made contributions to our understanding of ourselves. Some have emphasized one aspect and some another: the role of libidinal development; the self-image; motivation theory; perceptual components; and so on. This is not the place for a critical survey of personality theories, nor an attempt at a synthesis of them, and yet the meaning of the occupation for the individual cannot be more than superficially investigated without some idea of what sorts of things are significant for the individual and why. To this end it has seemed simplest to select one theory to throw into focus the dynamic and the emotional aspects of the problems we are dealing with. The basis for the choice, for this purpose, must be the relevance of the theory for the problem at hand. Judgment as to the relevance and adequacy of available theories is obviously a personal matter. Neither selection nor presentation of the data has been affected by the theory chosen. Hence any who prefer other theoretical orientations may interpret these materials accordingly.

Here we shall apply the theory developed by Maslow, in a long series of articles and a book. In this chapter the theory will be presented briefly, and its pertinence to occupational behavior will be noted. It will be referred to again in the final chapter. For greater simplicity of exposition, no consistent attempt is here made to point out similarities and dissimilarities to other theories.*

Maslow looks upon the individual as an integrated, organized whole. Understanding and classification of man's motives should be human-

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* Maslow's general theory is not without its shortcomings, but these, as it happens, do not notably affect the aspects of the theory that are of particular importance for normal psychology, and hence they do not need discussion here.

centered rather than derived primarily from animal studies. Classification should be based upon goals (in the sense of fundamental goals or needs, not a specific goal object) rather than upon instigating drives. These fundamental goals or needs may be and often are largely unconscious. Needs can be classified at any level of specificity, but atomistic listings of particular drives imply equality in potency, in probability of appearance and in isolatedness, and all these attributes are inappropriate. Obviously the situation within which the individual is reacting must be taken into account, but this alone cannot determine behavior, and the field itself is partially defined by the organism functioning within it. We must take account not only of the integration of the organism but also of the possibility of isolated, specific, partial or segmental reactions. Motivations are only one class of determinants of behavior. Although behavior is almost always motivated, it is also almost always biologically, culturally, and situationally determined as well.

Of particular importance for the psychology of occupations is Maslow's arrangement of basic needs in a hierarchy of prepotency. The prepotent needs are more urgent and insistent than the others under equal deprivation, and until the prepotent ones are relatively satisfied the others do not emerge as consistent motivators of behavior. This hierarchical concept is useful in explaining many aspects of normal and neurotic behavior. These basic needs are:

1. The physiological needs.
2. The safety needs.
3. The need for belongingness and love.
4. The need for importance, respect, self-esteem, independence.
5. The need for information.
6. The need for understanding.
7. The need for beauty.
8. The need for self-actualization.

They are arranged in this list in the usual order of potency. A man who is unsatisfied in all his needs will be most urgently, in fact probably totally, concerned with only the first, his needs for food and drink. When these are satisfied he can think of shelter, and safety, and then of companionship, and so on. The most direct way to develop a life at a higher need level is through adequate gratification of the lower needs. It is true that some exceptional persons have achieved such a state by suppression and sublimation, but these are the exceptions, and it is very doubtful that a higher level can be reached by asceticism than can be reached by gratification. This order of potency is usual but not invariable for all persons.

Maslow does not make a special point of individual differences in the strength of the basic needs, but these surely exist and are of considerable importance. It is obvious that the higher needs, a need for information or for beauty, for example, are very much stronger in some individuals than in others, and it will be seen that the strength of these needs is of direct importance for occupational choice. Such differences occur quite apart from the degree of satisfaction of more prepotent needs.

DESCRIPTION OF THE BASIC NEEDS

Physiological needs

These needs are the ones usually taken as a starting point for motivation theory. They are unlike the other needs in that most of them give at least the appearance of somatic localizability although this is more apparent than real. Hunger, for example, seems to be localized in the stomach, but in fact in extreme hunger most, if not all, of the tissues of the body are altered, and all are in need. The same is true of thirst. Sexual needs probably are localized when divorced from such other needs as those for belongingness and love, or for esteem, which are often channeled with sex in actual behavior, but they may also be like hunger and thirst in this respect. Other needs in this group, such as fatigue, sleepiness, maternal response, are not so localizable.

These are the most prepotent of all needs in their own right. Like all other needs, the consummatory behavior involved with them can serve as channels for all sorts of other needs as well. The person who thinks he is hungry, for example, may be seeking comfort or reassurance as much as proteins or carbohydrates. Further, hunger can be partially satisfied by drinking water or smoking cigarettes. When any of these needs cannot be gratified the organism tends to become dominated by them, and other needs just fade out of the picture. This dominance does not develop through transitory lack of gratification, or even through moderately prolonged lack when the means for gratification are known to be shortly available. These are all recurrent needs. What is important for health is not so much immediate gratification whenever the appetite appears, but the certainty of the possibility of gratification within a reasonable time. Such a possibility is usual in our society for most of these needs, except for sex.

The safety needs

Safety needs, too, are more often gratified than not in our society, at least for adults. We can see them more clearly in children, in their direct reaction to bodily illnesses, absence of parents, to the appearance of strange, unmanageable stimuli, and in their usual preference for an organized and moderately routinized world. We seldom have to worry about unexpected bodily danger except in terms of diseases or traffic accidents. Normally the safety needs are obviously active only in emergencies of one sort or another.

The child's preference for order and routine and the not uncommon preference among adults for familiar rather than unfamiliar things (as a steady diet) are probably related to these needs. The known is safer than the unknown, hence the quests for knowledge and for understanding may have linkages with the safety needs, although they seem more than subsidiaries.

The needs for belongingness and love

When the first two groups of needs are relatively satisfied, this group appears. People want a place in their own group and affectionate relations with other people. The thwarting of these needs is, in our society, one of the commonest causes for unhappiness, for neurosis, and even for more severe psychopathology. Because of this many clinical studies have been made of these needs, and we know more about them than about most of the other needs except the physiological ones. Part of the difficulty has been that love and affection are frequently expressed in sexuality, about which our civilization has been at best ambivalent. These needs involve not only receiving but also giving love. Like all the others except the physiological needs, these can be lost without loss of life. In the psychopathic personality this loss appears to be permanent, and there is no known cure.

The esteem needs

These are the needs for self-respect and self-esteem, which are firmly based in reality, and the respect and esteem of others. These may be two subsidiary sets, but they are closely related. One desires strength, the certainty of one's capacity to cope with whatever he is likely to meet, and the freedom to do it in one's own way. There is also the need to have this state appreciated by others, to be recognized by them as competent. There is some clinical evidence that the perception of oneself as competent and worthy of respect derives in part from the observation that others perceive one so. Thwarting of these needs produces feelings of inferiority, of weakness, and of helplessness. These needs have been relatively neglected by the Freudian group, but stressed by Adlerians to the neglect of other needs.

The need for information

This need and the others listed after it are less clinically differentiable in terms of the pathology that follows their frustration. This does not mean that their frustration does not involve pathology; it may mean only that it has not been recognized as such. It would appear that some forms of psychopathology, particularly of the value system, can result from the ungratified needs for knowledge and for understanding. There is almost no research directed to this point. These needs, too, can apparently be lost. There are persons who avoid the possibility of acquiring specific information. This can develop as a result of frequent early punishment or derogation for inquisitiveness.

From another point of view, such needs as this and succeeding ones *must* be postulated as basic in man in order to understand his history. How else than by the presence of instinctoid needs of these sorts can we possibly explain the enormous differences between man and other animals? It was pointed out that the need for understanding may have some relation to safety needs, but all animals have safety needs and none of the others have sought information consistently. It is possible that chimpanzees have a rudimentary form of this need or of the need for understanding, or both, and that this helps explain some aspects of their behavior. (See, for example, Harlow.) Furthermore, we see this need and the need for understanding reflected in the behavior of the most primitive men known to us. We have seen in Chapter 1 that one of the earliest and commonest occupational differentiations is that of the medicine man or priest, who can "explain" particular aspects of the environment. (He may also attempt to control them, but this is secondary and the techniques are based upon the explanation.) In addition anyone who has watched children grow up knows how the normal child accumulates and treasures items of information and seeks for understanding. "Why?" is probably one of the most frequently uttered words in the 4-year old's vocabulary. How many children are so thwarted then that this need disappears? A number of school problems are probably to be understood as the frustration of this and succeeding needs.

The need for understanding

We need to have some understanding of the world around us and of ourselves, and with some persons this is an intense craving. Because this and other higher needs have been generally overlooked as basic motivators, we have practically no studies of them. It is, however, clear that gratification of them is important. Interpretation of the world in terms of some religious or philosophical scheme is a part of every known culture. It is not of equal importance to every individual in the culture; variations in this and the subsequent needs may be very large. We have never evaluated the results for the individual who is forbidden areas of inquiry and understanding because of political or religious ideologies; hence we do not know what kinds or degrees of pathology may result.

The need for beauty

A need for beauty is postulated on the basis of common experience rather than of clinical or laboratory research. As yet, it has not been demonstrated that its frustration can produce disease, pathology, or some other disturbance of the fullest possible development of the organism. Until that is done, it can only be included tentatively in a list of basic needs.

The need for self-actualization

There is sufficient clinical basis, not only in Maslow's own studies but also in many reports of therapy, for assuming a need for self-actualization. All that a man *can* be he *must* be if he is to be happy. The more he is fitted to do, the more he must do. The specific form that this need will take must naturally vary with the capacities of the individual. It may or may not be expressed creatively, at least in terms of products which are detachable from the individual. It will probably always be expressed creatively in terms of life style. Effective self-actualization, however, can emerge freely only with prior satisfaction of the physiological, safety, love, and esteem needs, and some of the others. When it has emerged fully it seems to organize and to some extent to control these other needs.[*]

THE NATURE OF THE BASIC NEEDS

These basic needs are considered to be instinctoid in nature. They are not, however, the same as the sort of instinctive behavior found in the lower animals. It has been shown (in greatest detail for sexual behavior, by Ford and Beach) that generally the farther up the phyletic scale we go the fewer innately determined and unmodifiable behavior patterns we find, and the more of flexible adaptation of behavior to reach goals that are instinctively desired. In man this development seems to have reached a very great extreme, such that he has almost no inherited patterns of behavior. Instead he does have certain basic needs or urges which seem to be innate, but which may be satisified by many different and changing patterns of behavior. That these needs are innate and instinctoid in nature follows from the way they become manifest. Maslow says they are . . .

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[*] It may be, in fact, that the motivation subsumed by Maslow under this rubric is of a different sort than his other needs, and is even more basic. It would seem to be what Nissen speaks of when he says, "Capacity is its own motivation."

> . . . inconceivably stubborn and recalcitrant. They resist all blandishments, substitutions, bribes and alternatives; nothing will do for them but their proper and intrinsic gratifications. Consciously or unconsciously they are craved and sought forever. They behave always like stubborn, irreducible, final, unanalyzable facts that must be taken as givens or as starting points not to be questioned.

It is nevertheless true that they are not powerful, strong, unmodifiable, uncontrollable, and unsuppressible. They are, except for the physiological needs, for the most part weak and modifiable and may even under some circumstances and in some persons disappear altogether. Apparently their strength also varies between persons, but we know almost nothing of the range of such variability. Generally, the higher the position of the need in the hierarchy, the weaker and more suppressible it is. It is probably also true that the higher in the hierarchy the less certain it is that the need will appear in all humans. This does not indicate that these needs are not truly instinctoid. A character in process of evolution does not typically appear in every member of the species, and even a fully established species character may be lacking in some individuals, although at this stage the lack is usually pathological. It is not only possible but also probable that these higher needs are later evolutionary developments in man, and that some of them are not yet so firmly established that they cannot be destroyed.*

A satisfied person is one for whom there are readily available the means of satisfying all his basic needs, whenever he develops an "appetite" for any of them. The healthy man is one in whom these needs can be activating when they are appropriate, and whose life is so organized that acceptable means of satisfaction are readily available.* A really healthy, fortunate adult is one for whom this has usually been so during his lifetime. Clinically it has been shown that the person who has generally been gratified in his basic needs is the one who can most readily tolerate frustration of them over long periods. It is the man who has been subjected to early and frequent or constant frustrations who develops neuroses, and cannot tolerate even temporary frustrations of his appetites.

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* The possibility of the destruction as a species character of these higher needs is a terrible one and one that is especially important today. We have reason to believe that the man who has known true freedom will not willingly give it up. However, men have been enslaved and some have never known freedom. In individuals we know that the higher needs can be effectively destroyed. If, in addition, some situations occur in which those who survive are mostly those who do *not* carry these needs as genetic characters, or who carry them only weakly, it may well be that the combination of little need and no chance for even that much need to appear will result in the emergence of men without enough desire for self-actualization and freedom to make any effort to achieve it.

On the other hand, needs that have not emerged cannot be frustrated (unless there is a sort of generalized frustration from their nonemergence), yet once higher need gratification has been experienced it will constantly be sought.

BASIC NEEDS AND THE OCCUPATION

Now let us see what bearing this theory has upon the role of the occupation in the life of the individual. We have said that there is more to a job than making a living. The point is, how much more, and what?

We have noted that needs can be gratified in different ways, and that one situation may be simultaneously gratifying to many needs. Furthermore it should be understood that the usual situation is not so much that all the needs of Group 1 must be completely satisfied before any of Group 2 can emerge, and so on, but that as we go up the hierarchy there is a decreasing percentage of satisfaction: when most of a lower group are satisfied, other higher needs may emerge, but when the latter are only partially satisfied others may emerge, and so on.

The application of this theory to occupational psychology is fairly obvious. In our society there is no single situation which is potentially so capable of giving some satisfaction at all levels of basic needs as is the occupation. With respect to the physiological needs it is clear that in our culture the usual means for allaying hunger and thirst, and to some extent sexual needs, and the others is through the job, which provides the money that can be exchanged for food and drink.

The same is true for the safety needs. This applies not only to the possibility of renting an apartment or buying a house, or otherwise providing oneself with shelter and clothes, and the sanitary techniques and medical care that cut down the incidence and severity of disease, but also to safety in a long-range sense. This means the certainty that these provisions will be available to a person not only during the working period, but afterwards in terms of pensions, savings, and so on. It has been repeatedly demonstrated that many persons will choose a job which promises security over one which pays more but cannot be counted upon to last.

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* This differs somewhat from Maslow's published presentation, but has been adopted by him (personal communication).

The need to be a member of a group, and to give and receive love, is also one which can be satisfied in part by the occupation. To work with a congenial group, to be an intrinsic part of the functioning of the group, to be needed and welcomed by the group are important aspects of the satisfactory job. Such satisfactions as these play a large part in the cooperative enterprises characteristic of nonliterate societies.

Perhaps satisfaction of the need for esteem from self and others is most easily seen as a big part of the occupation. In the first place, entering upon an occupation is generally seen in our culture as a symbol of adulthood, and an indication that a young man or woman has reached a stage of some independence and freedom. Having a job in itself carries a measure of esteem. What importance it has is seen most clearly in the devastating effect upon the individual of being out of work.

In general, in this culture, any adult male who does not have a definite job is suspect. The same does not apply to women now, but it may well do so in the future. The woman who is not running a home is increasingly likely to work, and not only for economic reasons. It has been the experience after both world wars that many women who went into war work, for whatever reason, have been reluctant to return to a nonworking status. It is often clear that the pay check has been a relatively minor incentive. The woman whose only function is the care of a small home, without children, is now frequently dissatisfied. There just is not enough in this occupation now to give her sufficient feeling of accomplishment to meet her esteem needs, if these are not fully met elsewhere. She may also feel isolated and without group identification, and hence is much more dependent upon her husband for these satisfactions. This dependency is not adequately returned as a rule, since of course he is receiving many of these satisfactions in his job and needs fewer of them from her.

It is not only in modern society that esteem is important to the individual. Herskovits remarks,

> The prestige that accrues to the hard worker, the fast worker, the careful worker, the competent worker, is thus a significant factor in motivating labor

in most societies. It is doubtlessly this drive to excel and to be reputed for excellence in certain crafts that has stimulated skills that otherwise might only have remained latent. Prestige is therefore to be regarded not only as an important reward for labor, but in itself a factor in encouraging production. As such, it must have played no inconsiderable part in the development of traditions for specialization in labor.

In our culture social and economic status depend more upon the occupation than upon anything else. Sociological as well as psychological studies are practically unanimous on this point, although there are of course exceptions. Feelings of personal esteem are also closely linked to the amount of responsibility the job entails. This is reflected in ratings of the prestige of occupations and in studies of job satisfaction. The degrees of freedom and responsibility in an occupation enter into these evaluations more importantly than do the levels of skills and training, or than do salaries.

People whose life situation is especially difficult may find that the status and prestige conferred by the occupation, or received from fellow workers, are the greatest sources of satisfaction for these needs. This may apply particularly to members of minority groups of all types, who may receive an acceptance occupationally which they cannot achieve socially, or who may gain social acceptance through occupational status. The psychological burden of special disabilities may also be considerably relieved if a disabled person can hold his own with nondisabled on the job.

Technical studies of ego-involvement are relevant here, especially for their bearing on aspiration levels. Holt defines ego-involvement as meaning that self-esteem is at stake. Kausler has shown that ego-involvement brings about increased drive and that this increases performance.

Occupations as a source of need satisfaction are of extreme importance in our culture. It may be that occupations have become so important in our culture just because so many needs are so well satisfied by them. Whether the relation is causal or not, and if so which is cause and which is effect, does not particularly matter. It is probably a sort of feedback arrangement anyway. What is important is that this relationship exists and is an essential aspect of the value of the occupation to the individual.

We know too little about the remaining groups of needs to do much more than note their probable relation to occupations. We do not, for example, know whether needs for information and understanding are related importantly to intelligence, or to what extent the strength of these needs determines in the individual the development or level of functioning of what we call intelligence. These needs seem to be expressed and satisfied most fully in the learned occupations. In my own studies of scientists it was very clear that one of the important aspects of their selection of and devotion to science was an imperative curiosity, a need to know. Sometimes and then only partially, this could be shown to have a defensive aspect. More often it could not be reduced to anything else as primary. These needs are not limited to scientists, however, nor is their expression possible only in obviously intellectual activities. In almost any kind of work, it is more satisfying for the worker, and he will probably do a better job, if he knows what he is doing and why, and where his particular job fits into the total picture. The practice of "briefing" men for missions in the army, sales meetings, and so on, is a recognition of this fact. To do senseless work is pathogenic. A good example is the difference psychologically between the obviously valuable work done by the Civilian Conservation Corps, during the depression, and some of the "made" work of the Works Progress Administration.

We do not know how closely the need for beauty may be related to particular sensory or other capacities which we do know to vary from individual to individual. It is probably true that variations in these needs are associated with the different artistic vocations, but they may also be reflected in many everyday activities of persons who are neither trained nor particularly interested in formal artistic activities.

The need for self-actualization seems less likely to have specific concomitants in terms of particular occupations, but its strength may well be the key factor in differentiating those who put enormous yet easy and pleasant effort into their work from those who do not. This factor of happy effort and of the amount of personal involvement in the work is probably the most important single factor in success in the work. At least, in any occupation, all those who have attained high status have put great effort into their work. All studies of eminent persons and geniuses have noted that more is needed for great achievement than capacity. Witty and Lehman, for example, have pointed out that works of genius have emanated from individuals of moderate capacity who had impelling drives to accomplishment. In the ensuing discussions of relations between various capacities, we must keep in mind that capacities that are not used may as well not be present.

This need for self-actualization appears in other than characteristically creative behavior. Walker and Guest, discussing the frustrations incident to a mass production job, suggest that the feeling of anonymity, of becoming depersonalized, is more disturbing than either the boredom or the tension that arises from repetitive and mechanically paced work. Certainly the more potentialities a job draws upon the more satisfying it can be. The right job for the right person makes sense only in such terms as these. With the increasing number of mechanical jobs, assembly line, lower white collar jobs, we are inevitably getting an increase in dissatisfied and unhappy and neurotic people. Changes to shorter working hours and to more leisure time are in some sense an attempt to meet this problem, but they leave the problem unsolved because the fact of free time does not ensure the means of utilizing it happily. No doubt the extraordinary development of the "do-it-yourself" gadgets is an attempt in this direction, but the situation calls for more than symptomatic treatment.

Genuinely creative behavior can probably emerge only at the level of self-actualization, as Maslow suggests. If this is so, however, I should be inclined to put this need lower in the hierarchy, perhaps below the need for information. As has been pointed out, these last four groups of needs, for all their significance for us, have been studied hardly at all. It must be emphasized that genuinely creative behavior may or may not have enduring social importance. As much genuine creativity can go into the making of a home or the developing of an assembly line or into the evocation of rich personal relationships as goes into the production of a great work of art or of a new scientific theory. There is certainly a difference in the impact upon the culture, but this is another matter. Such needs as these can only be well satisfied in a culture which allows for a maximum of diversity.

There is one study which has noted the possible implications of Maslow's theory for occupational psychology. Centers, attempting to study the relationships between certain motivational phenomena and occupational stratification, worked on the hypothesis that

> . . . men's satisfactions, desires, aspirations, and goals are strongly conditioned or determined by their present roles, statuses, and levels of achievement as these are manifested in their placement in diverse occupational strata.

He interviewed a sample of 1,100 white male adults, so selected as to constitute a representative cross section, nationally. These were classified into the following occupational groups: Large Business (owners and managers), Professional, Small Business (owners and managers), White Collar (clerks, salesmen, draftsmen, technicians, etc.), Skilled Manual (including foremen), Semi-Skilled, Unskilled, Farm Owners and Managers, and Farm Tenants and Laborers. For our purposes it will be sufficient to consider his results for two broader groupings of urban workers: A. All business, professional, and white collar persons; and B. All manual workers.

He found the greatest satisfaction in Group A, and the greatest dissatisfaction in Group B. The reasons adduced by these groups for their satisfaction and dissatisfaction are shown in Tables 3.1 and 3.2 (condensed from his tables). It should be noted in comparing these responses that 85 per cent of manual workers are either poor or poor plus in economic or standard-of-living status, and that this is true of only 23 per cent of the other group. Furthermore their actual insecurity is much greater, as only one-third of the manual workers have never been out of work.

TABLE 3.1. PSYCHOLOGICAL DIFFERENCES OF OCCUPATIONAL STRATA: SATISFACTIONS IN WORK (FROM CENTERS)

	Total	A[a]	B[b]
Number in group	965	366	321
Percentage Saying[c]			
Freedom, independence	25.2	20.0	14.0
Interesting, varied activity	20.6	21.6	20.6
Nature of the work itself	13.8	11.7	15.6
Working with people, liking associates	13.7	21.3	12.8
Pay, profit	8.9	10.1	11.8
Security, steady work	6.6	7.1	8.7
Creative activity	6.1	8.7	4.0
Healthy, outdoor work	4.5	1.1	3.1
Good treatment and benefits	3.9	3.8	6.5
Responsibility, status	3.8	6.8	2.2
Utilizing full abilities	3.5	4.4	3.7
Serving others	3.3	6.3	0.9
"It provides a living"	2.9	1.4	2.5
Good chances to advance	2.4	3.8	2.5
Familiar work	1.9	1.1	3.1
Easy work	1.8	1.6	3.1
Good hours	1.3	1.4	2.2
Helping war effort	0.9	0.5	1.9
Doing something everybody else can't do	0.7	....	1.9
Other answers	1.0	0.3	1.2
Didn't say	6.3	5.7	7.2

[a] All business, professional, and white collar.

[b] All manual workers.

[c] Percentages add to more than 100. Several reasons were given by many.

Centers also gave his subjects a card containing the ten statements given below and asked, "If you had a choice of one of these kinds of jobs which would you choose? Just call out the letter." The word

TABLE 3.2. PSYCHOLOGICAL DIFFERENCES OF OCCUPATIONAL STRATA: FRUSTRATIONS IN WORK (OF THOSE WHO WERE DISSATISFIED) (FROM CENTERS)

	Total	A[a]	B[b]
Number in group	158	54	84
Percentage Saying[c]			
Low pay, poor profits	21.5	25.9	17.6
Uncertainties, insecurity	13.3	9.3	14.3
Speed-up system, too hard	10.8	1.9	17.6
Ambitions unrealized	8.2	13.0	4.8
No chance to advance	8.2	11.1	8.3
The hours	6.9	5.6	8.3
Lack of freedom	5.7	5.6	4.8
Too monotonous	5.7	9.3	2.4
Not my line of work	5.1	7.4	3.6
Too confining	5.1	7.4	4.8
Full abilities not utilized	4.4	3.7	3.6
Bad working conditions	3.8	1.9	6.0
The boss	3.2	1.9	3.6
The treatment	3.2	3.7	3.6
The people I work with	2.5	1.9	3.6
The public is too hard to please	1.9	1.9	2.4
Nature of the work itself	1.9	1.9	2.4
It's too dirty	1.9	....	3.6
Being away from home	1.3	1.9	1.2
Other answers	5.1	7.4	1.2
Didn't say	3.2	3.7	3.6

[a] All business, professional, and white collar.
[b] All manual workers.
[c] Percentages add to more than 100. Several reasons were given by many.

in parentheses below is the rubric for each question, in Table 3.3. Each subject was asked to make first, second, and third choices.

A. A job where you could be a leader. (Leadership.)
B. A very interesting job. (Interesting experience.)
C. A job where you would be looked upon very highly by your fellow men. (Esteem.)
D. A job where you could be boss. (Power.)
E. A job which you were absolutely sure of keeping. (Security.)
F. A job where you could express your feelings, ideas, talent, or skill. (Self-expression.)
G. A very highly paid job. (Profit.)
H. A job where you could make a name for yourself, or become famous. (Fame.)
I. A job where you could help other people. (Social service.)
J. A job where you could work more or less on your own. (Independence.)

TABLE 3.3. PSYCHOLOGICAL DIFFERENCES OF OCCUPATIONAL STRATA: VALUES AND DESIRES (FROM CENTERS)

	First Choice		Combined 3 Choices	
	A[a]	B[b]	A[a]	B[b]
Number	424	403	375	357
	%	%	%	%
Self-expression	30.9	16.6	58.4	45.1
Independence	16.5	21.6	51.7	53.8
Security	7.1	21.8	26.9	54.3
Interesting experience	13.2	9.7	45.3	39.8
Social service	10.6	10.6	43.2	44.5
Profit	5.8	5.5	21.1	22.7
Leadership	6.4	4.0	14.9	7.8
Esteem	5.2	4.0	20.8	12.9
Power	2.6	4.5	7.7	9.0
Fame	1.7	1.7	10.0	10.1

[a] Business, professional, and white collar.
[b] Manual workers.

Centers comments:

> If we may regard the frequency of a choice for a given value situation in the total of the three as an index to the *extent* of desire in the population for it, and interpret the frequency of its being first choice as a measure of intensity of desire, then, clearly, what people want most commonly is also desired most strongly. Though one must be cautious of concluding too much from people's verbal expressions, such consistency and patterning induce added confidence in the general validity of these data. . . .
>
> These value preferences express important differences in needs, or at least they seem to make a good deal of sense when interpreted in such terms. People in the lower strata of society appear dominated by the simple problems of existence as expressed in desires for security, that is, for a job they could be absolutely sure of keeping, but the higher occupational groups seem relatively free of such a basic need, and they express their emancipation by a preference for situations providing them with self-expression and interesting experiences. The lower groups, to be sure, often want these things too, but they want security more, and in the lowest strata, among the unskilled and farm tenants and laborers, the desire for money, or "the profit motive," becomes almost as important as that for "self-expression." A greater emphasis is also clearly shown within the upper strata for leadership and social approval or esteem, while these, particularly leadership, are of relatively minor importance to the lower groups. All groups, urban as well as rural, high as well as low, indicate by the frequency of their preferences that independence or freedom from supervision is a highly prized and much valued circumstances. It is the most important value in our culture in terms of our data.
>
> The findings of this survey of motives are rather strikingly in harmony with a theory of motivation advanced by A. H. Maslow who holds that motives in the individual are organized into a hierarchy of prepotency. . . .

> Two specific findings in this study particularly support Maslow: (*a*) The increasing frequency with which people indicate their desire for security in choosing "A job which you were absolutely sure of keeping" to be seen as one examines successively lower occupational levels, and (*b*) the increasing frequency with which increasingly higher strata indicate a desire for self-expression ("A job where you could express your feelings, ideas, talent, or skill"), a desire that is similar to, or an aspect of, what Maslow calls the desire for self-actualization. The finding that modest trends exist for the frequency of desires for esteem, leadership, and interesting experience to increase with higher occupational status also is in keeping with Maslow's views.
>
> Persons in the lower socio-economic levels manifest a safety or security need much more frequently than do people in higher socio-economic positions, we might assume, because these latter have already in considerable numbers satisfied this need, whereas the former have not. With the security need satisfied other and higher needs take its place, and so we find people in the upper occupational strata manifesting desires for self-expression, esteem, leadership, and interesting experience more often than we find such manifestations among the lower occupational groups.

The same point could be made much more clearly if, for example, Arab workers were to be compared with workers in the United States. Among the former sheer survival would be involved and would dominate everything. The higher the civilization is, the more the basic needs can be fulfilled by a job and the higher the needs can go.

In other studies, particularly of morale and of job satisfaction, there is much to support Maslow's views and nothing to contradict them, although none have been expressly designed to check his theory

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* Included in this list are only those articles not reproduced in full or in expanded versions in the book.

PART

II

People Differ

4. Variability
5. Physical Differences
6. Psychological Differences
7. Psychological Differences (Continued)
8. Differences in Social Inheritance
9. Differences in Education and Other Biographical Factors

CHAPTER 4

Variability

GENERAL PRINCIPLES OF VARIATION

THE INDIVIDUALS in any group of organisms have both similarities and diversities. No two individuals, even in the same species, are ever exactly alike. No matter how small the unit of population, there is variation among its members. This is one of the most fundamental generalizations in biology.

The sources of this variation lie in both heredity and environment and in their interaction. Heredity determines a range within which the given individual's characteristic will lie. No mouse is as large as an elephant. Environment may determine the place within that range that the expressed characteristic will be. The range of any particular character within any given population is determined by the potential ranges of all the members of that population. To what extent the full potentialities will be realized is largely a function of the limitations imposed by the environment. In famine times no organism can develop to its potential size. In man, the cultural environment is at least as effective in imposing limitations as the physical environment is.

There are a few individual physical characteristics which are apparently not modifiable by environment. The pattern of loops and whorls in finger and foot prints does not change during life. Blood type is another example of fixed characters. You remain whatever blood type you were when you were born, A, B, AB, or O. Within populations, however, the incidence of persons with these different types does vary, both from one group to another, and within one group in different generations. In general, characters of this sort appear to be of less significance with regard to personality than those which are modifiable by the environment. Characters limited to one or a few possible expressions, as blood types are, are *discontinuous* *variables*, and do not usually have the bell-shaped distribution that is characteristic of most *continuous variables*, which may take any value within the range, as height and weight do.

With rare exceptions sex is a discontinuous physical variable. Intersexes do occur, but they are genetically very rare and usually not functional. The physical fact of maleness or femaleness is a fundamental and normally unmodifiable character vastly affecting all aspects of human life. However, many secondary sex characteristics are modifiable, and most of these are continuously variable within each sex, with the distributions for the two sexes overlapping. Muscular strength is an example. (See Fig. 4.6.) Masculinity-femininity, in cultural terms, is a continuous variable.

Race, in the United States, is practically a continuous variable although culturally we make discontinuous discriminations. That is, culturally, a person with a very small percentage of Negro heredity is still considered a Negro, and is likely still to be discriminated against as such. But intermingling has been great, and in actual fact there is no sharp line which can be drawn between the races. This is less true of some other racial mixtures in the United States but is becoming increasingly so for all.

Characteristics of continuous variables

A characteristic which varies continuously may take any value within a range, the true limits of which remain usually indeterminate. However, with many biological and psychological characters a fairly regular pattern of frequencies occurs, that is, there will be one value, called the mode (usually at or near the mean of the group) which will be more frequent than others, and the frequency of any value will be the greater the nearer it is to the mode. This results in a bell-shaped distribution, as shown in Fig. 4.1. This is also called a normal distribution, and its basic statistics have been carefully developed.

This distribution, or a modification of it, is a good description of the occurrence in a population of most (but not all) of the variables with which we will have to deal. The most usual modification is one in which one side or the other of the distribution has a longer "tail," that is, the modal class does not come at the center of the range, but to one side of it, so that there are more possible values which the character can take above the mode than below it, or vice versa. Then the distribution is said to be skewed. Most distributions of scores on intelligence tests are of this nature. How closely the distribution of a character approximates a normal distribution may be important, and there are appropriate measures for expressing this.

The fact of the usually greater concentration of frequencies around a modal point is important for the significance that any particular value of any one character has for occupational psychology. It results in the general principle that values at or near the mean of the relevant group are of less significance for occupations than extreme values. There will be more suitable occupations available for persons with characteristics near the mean than for those at either extreme. Take height, for example. If a man is of approximately average height, his exact height will probably be of no importance whatever for almost any occupation that he may wish to enter. If he is unusually small some occupations will be closed to him, and if he is unusually tall the same will be true. On the other hand, of course, other occupations will be open to him which would be closed to persons of average height. If he wants to play professional basketball, for example, above-average height is now almost a prerequisite.

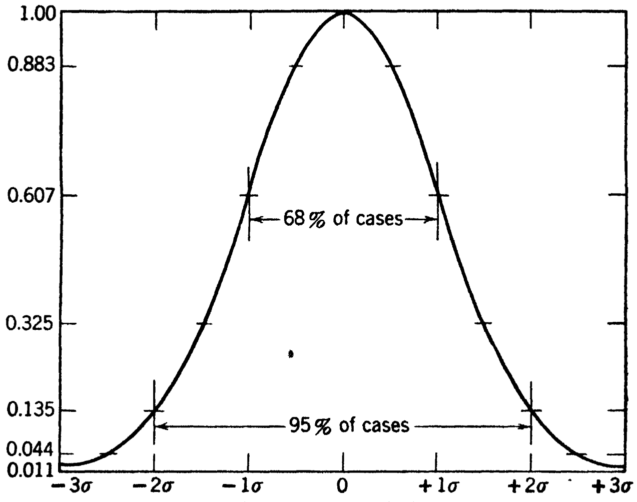

Fig. 4.1. The normal probability curve.

A normal distribution can be derived from multifactorial inheritance, or environment, or both. Characters that are influenced more or less equally by several genes (multifactorial inheritance) tend to produce distributions which are bell-shaped. On the other hand, genetically simple characters will also tend to take values with frequencies approximating a normal distribution, as a result of their interaction with the environment. Most of the characters with which occupational psychology is concerned are both multifactorial, so far as we know, and susceptible to modification by the environment. Intelligence is a good example.

Examples of variation

In all the examples which follow, it must be remembered that there will have been an interaction between the actual inherited character and the environment, so that the data given in the examples are neither purely one nor the other. The genetic potentialities for physical development, in terms of height and weight, may never be realized if there is an insufficient or an unbalanced food supply. Changes in height of first and second generations in this country are common, with the second generation averaging considerably larger than the first. This is a usual result when the first generation has emigrated from marginal or submarginal economic areas. With better physical conditions the second generation will average larger, even though there has been no change in the actual genetic potentialities.

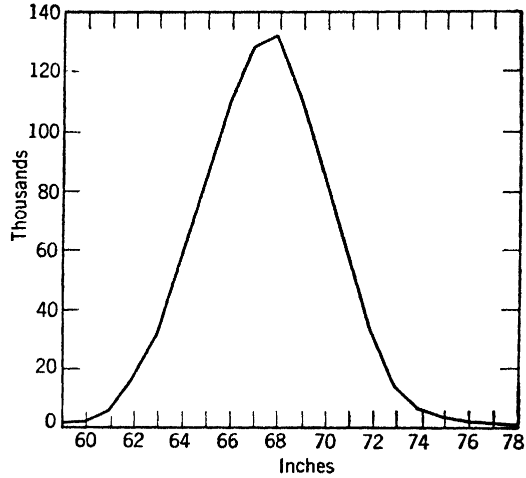

Fig. 4.2. Distribution of height for 868,445 American men, drafted in World War I. (Figure from Hilgard, data from Davenport and Love.)

Figure 4.2 shows the distribution of height of draftees in the First World War. It is very slightly skewed: shorter men were not drafted.

Distribution of another physical measure is shown in Fig. 4.3. This gives the Index of Body Build of 1,000 male neurotics studied by Eysenck. Note, incidentally, that there is no evidence of discontinuity in this curve, such as would suggest the existence of body "types."

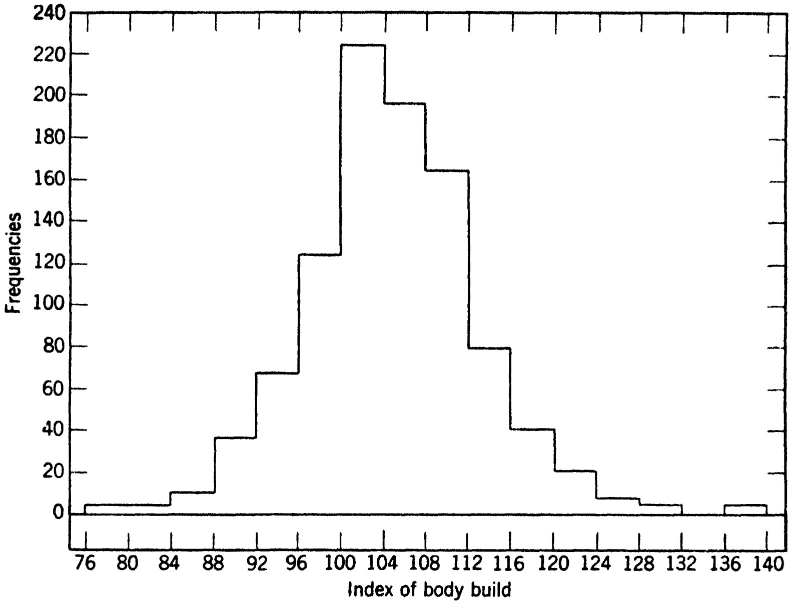

Fig. 4.3. Distribution of Index of Body Build for 1,000 neurotics. Index of Body Build $= \frac{\text{stature} \times 100}{\text{transverse chest diameter} \times 6}$. (From Eysenck.)

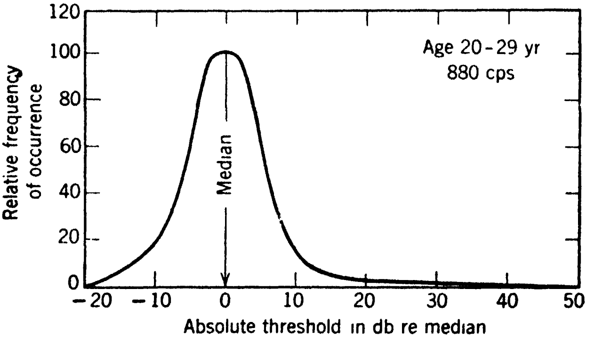

Fig. 4.4. Distribution of auditory sensitivity among individuals 20 to 29 years of age. (From Licklider.)

An example of variability in sensory capacities is given in Fig. 4.4, which shows the distribution of the auditory sensitivity of 35,589 subjects from 20 to 29 years old. The data are measurements of the absolute thresholds for an 880-cycle tone. Here, too, there is no discontinuity, yet those at one end of the scale would be called deaf.

That not all distributions are bell-shaped, however, is strikingly

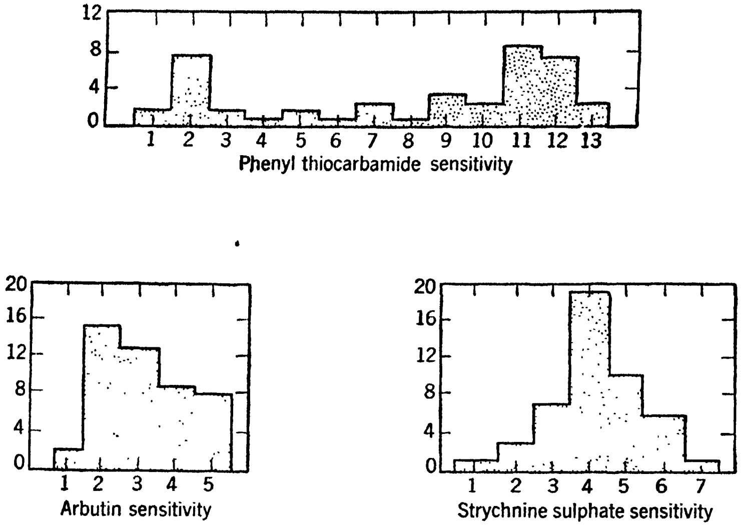

Fig. 4.5. Taste sensitivity to three different substances. (From Blakeslee and Salmon.)

evident in Fig. 4.5. This shows variability in taste sensitivity for three substances, phenyl thiocarbamide, arbutin, and strychnine sulfate. The same 47 subjects were tested with each substance, but the distributions of sensitivity are very different.

Figure 4.6 shows the strength of right-hand grip, separately for boys

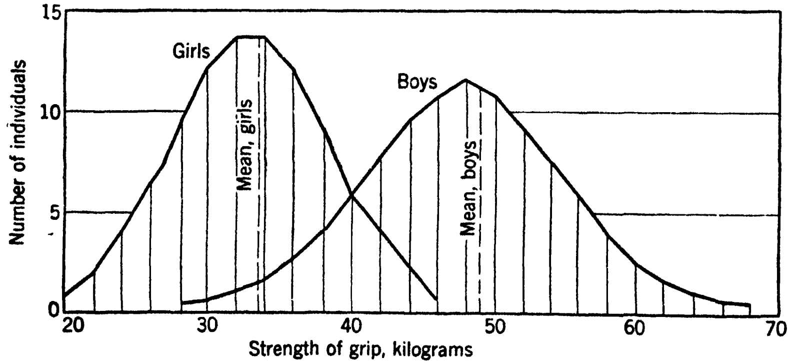

Fig. 4.6. Strength of right-hand grip for boys and girls. (Figure from Hilgard, data from Jones.)

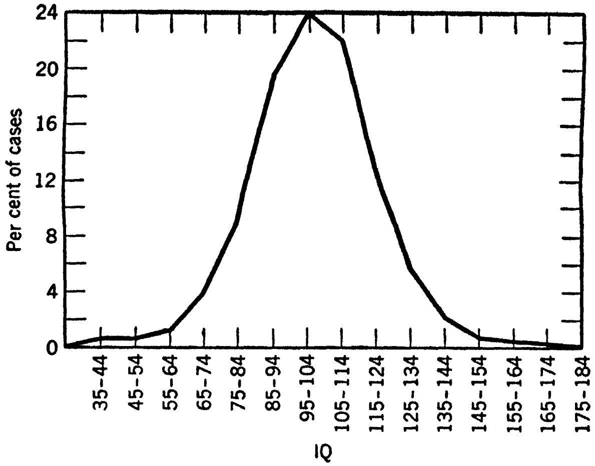

Fig. 4.7. IQ's of 2,904 unselected children between the ages of 2 and 18. (From Boring, Langfeld, and Weld.)

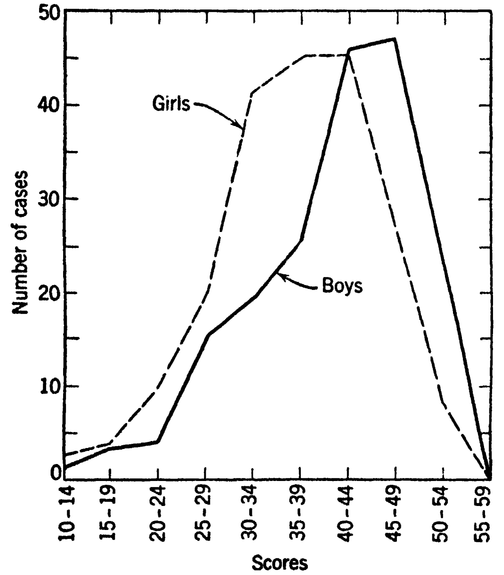

Fig. 4.8. Distribution of boys' and girls' scores on a test of arithmetic reasoning. (From Boring, Langfeld, and Weld.)

and girls. Note that although the two curves overlap markedly the means are very different.

Figures 4.7 and 4.8 present data from intelligence and arithmetic reasoning tests. Figure 4.7 approximates a normal distribution very closely indeed. In Fig. 4.8 scores are given separately for boys and girls. In this test the two distributions are completely overlapping, but there is a significant difference between the means, that for the boys being 40.4 and that for the girls 35.8.

VARIATIONS IN ENVIRONMENT

No two persons have the same environment and the same experiences. This is true of identical twins even though they are brought up in the same household. Within the same family, children may have quite different experiences, and the attitudes of parents and others towards boys and girls are not the same. Position in the family as first, second, third, or *n*th child may make a considerable difference in the attitudes of others towards you, and in your own developmental experiences.

Two families of approximately the same background and position will also provide quite different environments. These will vary with the temperaments and interests of the parents, with their compatibility, and with many other factors.

Within the same general culture families at the top of the social hierarchy will provide a very different environment, both physically and otherwise, from families at other levels of the hierarchy. Again within the same general culture, families with one religious affiliation will provide effectively different environments for their children than families with another affiliation.

In addition to differences related to family backgrounds there will be great diversity in experience in terms of sex, of education, and of social contacts of many sorts. All these factors add up to making every human's environment and experience different from every other human's, and the resulting interaction with the original, genetic constitution will be increasingly varied.

One of the important sets of variables will be the relative strengths of the different needs which we discussed in Chapter 3. We know nothing about the extent of genetic differences in these needs, but differences surely exist. There is also great variation in the amounts of past and present gratification of needs. Some theories about the effect of these differences on interests will be presented in the last chapter. For our present purposes it is important to remember only that individual variability is the rule here, too.

A child's particular socioeconomic inheritance may have a direct and a greater effect upon the occupations open to him or attractive to him than his physical inheritance, provided that the major characters of the latter are reasonably close to the mean for his own group. Socioeconomic status may also have any number of less direct but no less important effects. The evidence on this point will be presented in considerable detail in Chapter 8.

THE INTERPLAY OF HEREDITY AND ENVIRONMENT

We have given, in the case of height, a brief indication of the way in which environment may affect a physical characteristic. The interplay of heredity and environment is of such importance that it warrants further exemplification. For this purpose, let us look at the effect of environment upon intelligence, so far as this is understood. That heredity is a factor in intellectual level is clearly shown in correlational studies, which have demonstrated that, the closer the relationship between pairs of individuals, the higher the correlation on intelligence tests. Such correlations are shown in Table 4.1, and it is evident that there is a distinct hierarchical relationship.

TABLE 4.1. FAMILY RESEMBLANCES IN INTELLIGENCE TEST SCORES, SHOWN BY CORRELATION COEFFICIENTS (FROM WINGFIELD)

Type of Relationship	Correlation
Identical twins	.90
Like-sex twins	.82
All fraternal twins (both sexes)	.70
Fraternal twins of unlike sex	.59
Siblings	.50
Parent and child	.31
Cousins	.27
Grandparent and grandchild	.15
Unrelated children	.00

The problem has also been investigated by studies of children raised in foster homes. A study by Skodak and Skeels has shown that, whereas the correlation between own mother's education and child's IQ is +.32, the corresponding figure for foster mother's education and child's IQ is +.02.

Intelligence, however, is certainly also influenced by the environment. Various studies have demonstrated that an individual may never reach the level of intelligence possible by virtue of his genetic endowment because of a limiting environment. The limiting environment may be personal, socioeconomic, or related to national or broader cultural situations. An example of environmental limitation unique to the particular individual would be that of an orphan who was raised in the unstimulating and repressive atmosphere of the old-fashioned orphans' home, and who therefore failed to realize his genetic potentialities. A number of studies have shown that increases in measured intelligence are the rule after a child has lived for some time in a good foster home, when his previous environment was a deprived one.

Many studies in different countries have demonstrated differences in average scores on mental tests which are related to the socioeconomic status of the parents. An example is given in Table 4.2.

TABLE 4.2. STANFORD-BINET IQ (L-M COMPOSITE) ACCORDING TO FATHER'S OCCUPATION, FOR CHILDREN OF DIFFERENT AGES (CONDENSED FROM MCNEMAR)

		Age of Child			
Father's Occupation		2–5½	6–9	10–13	15–18
I. Professional	N	36	31	41	16
	M	115	115	118	116
II. Semi-professional and managerial	N	50	52	75	38
	M	112	107	112	117
III. Clerical, skilled trades, retail business	N	175	199	243	85
	M	108	105	107	110
IV. Rural owners	N	59	106	154	91
	M	98	95	92	94
V. Semi-skilled, minor clerical, minor business	N	224	249	289	104
	M	104	105	103	107
VI. Slightly skilled	N	59	77	90	32
	M	97	100	101	96
VII. Day laborers, urban and rural	N	30	58	67	27
	M	94	96	97	98

(Stern, examining such data as these, points out that both hereditary and environmental factors are involved in the socioeconomic status of the parents.) The table gives only means, but ranges in each instance are large, and each group overlaps the next greatly. The trend however is constant, and there is less overlapping between the extreme groups. Only about 10 per cent of the children of Group VII exceed the mean for those of Group I.

The problem of racial differences in intelligence is an extremely complicated one. It is a fact that we have no test equally applicable to persons of all possible backgrounds, that would be equally indicative of the intellectual level of an Eskimo, an East Indian, and an English-man, for example. The environmental differences are so extremely great among different human cultures that construction of a "culture-free" test can hardly be envisaged now. When tests standardized on one group have been applied to another differences of greater or less degree are usually found. The commonest situation has been the application to other racial groups of tests standardized on whites of relatively high cultural level, with resulting lower scores of the other groups. It is quite possible that other types of tests, standardized on other groups, would reverse the usual findings.

A famous geneticist, Sturtevant, has stated:

> On general grounds, then, as well as from some direct evidence, one must conclude that there are inherited differences in mental properties among individuals and, at least statistically, among racial groups. But it is necessary to insist that one must not go beyond this point. Specifically, one must not conclude that a particular observed difference is genetically determined. It is, of course, a platitude to say that no one ever does anything for which he does not have the necessary genes; but one must never forget that there is also a necessary environment. It scarcely needs argument that human behavior is strongly influenced by economic status, tradition, and training. . . . This caution about attributing observed differences to genetic causes, rather than to environmental ones, applies with special force to comparisons among racial groups, for here the effects of tradition and of public opinion are especially strong.
>
> Another thing that must be avoided is the view that one race (usually that to which one himself belongs) is "better" than another. All that can properly be concluded is that they are inherently different. It follows that society would do well to insure that as many people as possible, of as diverse racial origins as possible, get an opportunity to show what they can do to advance civilization. It may confidently be expected that individuals of various races will have the necessary genetic equipment to make unique contributions.

Some indication of the effect of environment in depressing the level of test intelligence in the American Negro can be gained from a study by Klineberg. He showed that the test intelligence of 12-year old Negro boys varied with the number of years they had spent in an urban environment. The data are given in Table 4.3. When deseg-

TABLE 4.3. INCREASE IN INTELLIGENCE TEST SCORES (NATIONAL INTELLIGENCE TEST) WITH YEARS IN CITY FOR NEGRO BOYS, AGE 12 (AFTER KLINEBERG)

Years in City	*N*	Mean Score
1–2	64	40
3–4	83	55
5–6	105	59
7 or more	165	69
City-born	359	75

regation is so fully accomplished that it no longer merits comment, and educational and social opportunities are equalized, it is practically certain that present Negro-white differences on intelligence tests will be greatly reduced.

In the broadest sense, whether or not individuals within a group achieve the highest level of which they are capable may be a function of the economic situation or of the general attitudes of the group itself. Under famine conditions, for example, the whole group will suffer in this and other respects, and there will be no possibility of the full development of higher capacities in enough members of the group to be significant for the group as a whole. Even under conditions of great prosperity, however, a similar result may result from a repressive attitude toward intellectual diversity. This is a great and present danger in the United States now.

VARIABILITY IN COMBINATIONS OF CHARACTERISTICS

Each man has many characteristics in common with thousands of other men: eye color, height, weight, IQ, and so on. In some respects, however, every human individual is unique: in the structure of the basic protein molecule, for example, in finger prints, perhaps in other physical characters that we have not yet isolated. Each man is also unique in his particular combination of characters, even though hundreds or millions of other individuals may be like him in separate characters.

Let us take one inhabitant of the United States as an example. He is a male. So, in 1940, were 66,061,591 other inhabitants of the United States. He is white. So were 53,437,432 other males. He is 25 years old. So were 4,698,365 other white males in the United States. He has had seventh-grade education. So had more than half the 25-year-old white males. He is 5 feet 7 inches tall. This is a little more limiting; only a few hundred thousand other 25-year-old white males with seventh-grade education will be just that tall. He weighs 150 pounds. This narrows it down just a little more. He has red hair. This is even more limiting. Every time another character is added to the description, the description applies to a smaller number of persons, until finally it can apply to only one man in the world. There is practically no end to the number of possible characters that can be added to the description: physical characteristics, psychological characteristics, social background, differences in experience. The last group of variables will bring it about, if no others do, that identical twins are not completely identical.

Some of the characteristics mentioned will be intercorrelated, for example, height and weight. Taller men of the same age and nationality, etc., tend to be heavier than shorter men. None of these correlations is unity, and most are rather low. Some characters may be negatively correlated. But correlations tell us only the average relationships, and in any given individual the average or usual relationships between characters may be reversed.

VARIABILITY AND OCCUPATIONAL PSYCHOLOGY

It must be abundantly clear by now that people differ, and also that the ways in which they differ are not random, although the final pattern may be so in effect. Both the degree and the kinds of variation are important for occupational psychology, but not all variations are of the same importance for most occupations. Occupations also vary in their requirements, as we shall see in Part III. Height, for example, is probably less significant for occupational selection than level of intelligence, and neither is so significant generally as interests are.

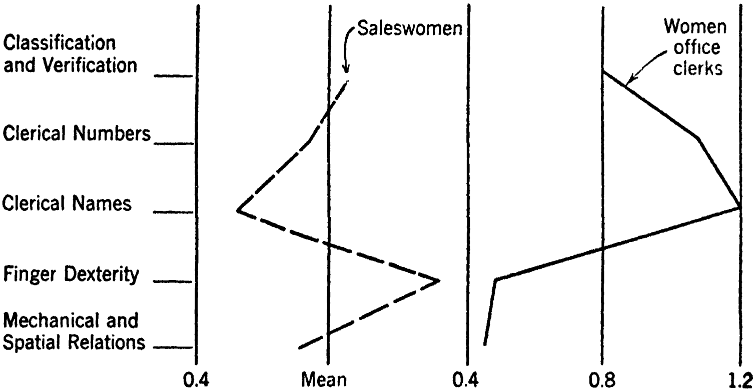

Fig. 4.9. Scores in sigma units on various tests. (From Paterson and Darley.)

It must also be noted that in general no one character is by itself decisive for occupational selection. Those which may have specific importance are discussed in succeeding chapters. For most occupations the patterning of characteristics is more important than the presence or absence of extremes of any single one. This has been abundantly shown in the usefulness of profile analysis in vocational guidance. See, for example, the differences in pattern of test scores for retail saleswomen and women office clerks, shown in Fig. 4.9. Note particularly that all these scores for saleswomen are near the mean.

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CHAPTER 5

Physical Differences

WE HAVE ALREADY DISCUSSED the considerable variability of human characters, including the physical. Special use of the body itself, rather than tools or the mind, is a characteristic of some occupations. These occur chiefly in the outdoor group or in the arts and entertainments group. Even for these occupations, the basic capacities required are often themselves within the normal range although their development or use is above average. Apart from occupations such as these, variability in physical characters in itself has little bearing on occupational pursuits. Even when physical factors are of some importance they are usually less important than other factors.

RACE

The undeniable fact that Negroes, Orientals, Mexicans, and many other racial minorities in this country are discriminated against occupationally as well as otherwise is not the result of any relevant physical differences among these groups. Nor is the discrimination the result of intellectual or personality differences, dependent only or primarily upon hereditary racial differences, so far as these exist. Thomas points out that war demands for labor gave Negroes opportunities for employment in many fields previously closed to them. Under these circumstances they were readily integrated into industrial programs, and they have performed successfully in semiskilled, skilled, technical, supervisory, and professional jobs. This is certainly evidence that the presence or absence of skills and capacities cannot be predicted from the race of the worker. Similar successful performance has been demonstrated by other minority groups. Nevertheless, the fact of belonging to a minority racial group is a very significant one for occupational choice and opportunity; however, the problem is a social and not a physical one. For this reason the discussion of race as a factor in occupational life will be presented in Chapter 7, along with other differences in social inheritance.

SEX

The situation with regard to sex differences has some similarities to that for racial differences. Neither the primary nor the secondary physical sex differences are of nearly so much importance with respect to occupations as are psychological and social differences. Sex differences in attitudes, interests, even in intellectual patterning are of considerable importance for occupational psychology, but they are more appropriately discussed as psychological differences than as physical ones. This is emphasized by the fact that, as shown in studies of masculinity-femininity, such differences form a continuum, and the actual physical fact of maleness or femaleness is not necessarily an indication of location at the maculine or at the feminine end of the scale. There are some women who are more "masculine" than some men, and vice versa. Differences in relative masculinity-femininity are related in many ways to occupational interests.

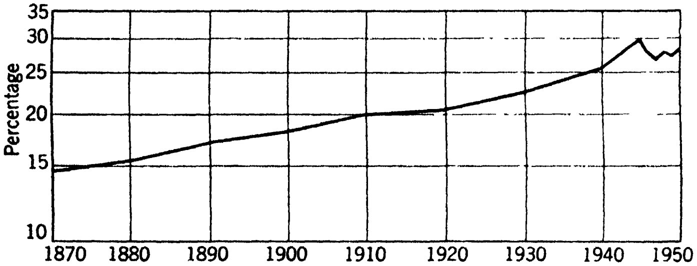

Fig. 5.1. Women as a percentage of the total working force, for the United States, 1870–1950. (From Jaffe and Stewart.)

Social aspects of sex differences are also more important than are physical ones. The simple fact is that a much larger percentage of women are working now than ever before, except during the wartime peak, and it is clear that this trend is a steady one. This is graphically shown in Fig. 5.1. There has been no change in the physical or other capacities of women. What has changed is the attitude of our society towards the employment of women.

However, there are some physical sex differences which are important. Certainly there are sex differences in sheer muscular strength (see Fig. 4.6) that do affect the ability to do certain types of work. Even these occupations are fewer than had been supposed—witness the number that women took over in wartime. Nevertheless this remains a biological difference, although it is one of markedly decreasing importance. More and more jobs requiring little except brute strength are being done by machines.

In addition there are special problems incident to women's biological role. The fact that women do the child-bearing and also the child-caring is certainly of importance for their occupational histories. It affects not only the individual woman but also attitudes towards the training and hiring of women, and the sorts of jobs open to them. It is undeniable that fewer women than men remain at work all their lives, and that the cost of training a woman for a job which she may leave shortly looms very large in some situations. It is one reason for lower pay for certain types of work, and for the employment of more women than men in jobs that require relatively little training but that are otherwise suitable for either. That all this is true does not, however, have any direct bearing on the suitability of any particular woman for any particular kind of occupation.

One other aspect of the biological difference is the menstrual cycle in women. It was held formerly that women had higher rates of absenteeism owing to menstrual difficulties. This seems not to be true. Whether or not there was more of this many years ago when women first entered industry in large numbers is not certain. There may have been. Along with other changes in women's attitudes about themselves, there has been a marked change in attitude towards the menstrual period. It is no longer necessary or even fashionable to be "sick." Real disabilities may not have decreased, but attitudinal ones certainly have.

Interestingly enough another physical fact, that of the greater average longevity of women, seems not to have had any specific effect in the job situation. Certainly in many individual instances it balances out the time lost in child-bearing in terms of the total number of working years available, and presumably could wipe out the deficit in training costs referred to above. There seem to be no calculations on this question. The practice of forced retirement at a set age lessens the effect of this differential. The increasing age of our population may force a reconsideration of the retirement age, and the fact of the sex differential in longevity may then get more attention in this respect.

As a quick orientation a survey of sex differences in occupational

TABLE 5.1. PERCENTAGE OF MALES IN SELECTED OCCUPATIONS IN 1940 (FROM MILLER AND FORM)

Occupation	Percentage	Occupation	Percentage
Locomotive firemen	100.0	Social, welfare workers	35.7
Piano tuners	99.1	Operatives (tobacco mfg.)	28.1
Conductors	99.1	Religious workers	25.4
Dentists	98.5	Teachers	24.6
Bakers	92.2	Operatives (apparel mfg.)	22.6
Purchasing agents	91.8	Laundry operatives	22.3
Proprietors (retail trade)	88.5	Demonstrators (sales)	17.4
Actors	59.3	Office machine operators	13.9
Laborers (laundry, dyeing)	58.8	Librarians	10.5
Operatives (cotton mfg.)	53.0	Boardinghouse keepers	9.5
Healers, medical social work	51.4	Stenographers, typists, secretaries	6.5
Operatives (woolen ind.)	50.3	Milliners	5.8
Servants, except private family	44 7	Housekeepers (private family)	0.8

opportunities is given in Table 5.1. The table gives a slight indication of the very wide range of occupations that women have entered. The first seven occupations in this list (those with over 60 per cent men) are, in fact, occupations that many more women would be capable of holding. That they do not is not because of physical or even psychological incapacities (although some sex differences in interests are present). It is also apparent that it is not physical incapacities that have kept men from holding those at the other end of the list. More detailed tables on differences in employment are given in Chapter 10.

GENERAL BODILY DEVELOPMENT

Differences in most physical characters which are continuous variables are of much greater significance for occupations at the extremes than they are around the means of the population. Within quite wide limits, even marked differences in such characters as height and weight are of little if any relevance for occupational selection. Extremes in these may be important, however. For example, an applicant for a job on the police force of most municipalities must be within specified limits of height and weight. Models are usually above-average height for women, but they must not be too tall. In other occupations for which no such specifications are necessary it may still be true that to be conspicuously large or fat or conspicuously small or thin may make it harder to get a job. This is usually not because of any specific job requirements but rather because of a rather general human tendency to look askance at the extreme variants. On the other hand, being an extreme variant may be an essential for certain occupations, that of circus freak, for example.

There are a number of occupations that require greater than average muscular strength or neuromuscular control. These include most of the occupations classified in the group of activities that are primarily outdoor in focus, and some in the arts and entertainment group. Others, which are classified elsewhere, usually semi-skilled occupations, also require above-average physical strength, but this is rarely of an extreme sort and is incidental to other aspects of the job. Truck driving is an example.

Except for these occupations and for the general body-build requirements that accompany them, there is not much in the typology of body build that is useful for occupational psychology. Early studies of physical characters were reviewed by Paterson in 1930. Since then Sheldon has developed a scheme of "somatotyping" by which individuals may be classified for body type. He considers three components: ectomorphy (the degree to which the body is rather frail and linear); endomorphy (tendency to fat); and mesomorphy (solid, dense muscle). Each is rated on a scale of 1 to 7. The strongest component determines the general class into which the subject is put. There have been no studies of body type in relation to occupations in general, but a few references to possible associations are scattered throughout his books. For example, he remarks that extreme mesomorphy is characteristic of athletes. Cureton, however, has made a study of athletes from this point of view and concluded that men and women low in mesomorphy seldom succeed in athletics, and that heavy athletes are relatively more mesomorphic, that track athletes have considerable ectomorphy, and that swimmers are more frequently meso-endomorphic.

Begelman made a careful study of 950 entering male freshmen at Oregon State College, attempting to find any relations between body build, physical performance, intelligence, or recreational interests and "occupational choice." Occupational choice was taken as the major school subject: English, science, pharmacy, forestry, business, agriculture, education, and physical education. His data on body build and physical performance are given in Table 5.2. There is very little relation between body build and occupational choice in these terms, except that physical education and education majors were somewhat taller, and physical education majors were significantly heavier than the others. The relation between physical performance (in terms of track and gymnasium activities) and occupational choice was negligible. It should be noted that studies in which the occupational classification is dependent upon student choices have the major drawback that it is not, of course, certain that this will be the eventual occupational choice of the individual (see Table 9.2), nor that, if it is, he will be sufficiently successful in it to remain. Probably because the student population is generally a readily available "captive audience" there are many such studies, more than of people actually on the job. Until there are enough of the latter studies, we are forced to make the most of what we have, but we must make allowances for this possible source of error.

TABLE 5.2. RELATION OF BODY BUILD AND PHYSICAL PERFORMANCE TO OCCUPATIONAL CHOICE (FROM BEGELMAN)

Occupational Choice	Body Build	Physical Performance
English	Average	Average
Science	Average	Low, except in 300-yd. dash
Pharmacy	Average	Average
Forestry	Slender, wiry, short	Average, except first in Burpee and pull-ups
Business	Average	Top in push-up and sit-up
Agriculture	Average	Low
Education	Tall and slender	(Not given)
Physical education	Heavier than all, taller than all but Education	(Not given)

In the past there was some superstition that persons who were particularly gifted intellectually or artistically were likely to be below the average in physical strength, endurance, and so on. Studies of gifted children and of eminent men have shown that this is certainly not true. Intellectually gifted children are somewhat more likely to be of superior height and weight and to have better health than the population at large (Terman, Raskin). Paterson's critical review of the evidence showed clearly that mental development is relatively independent of physical condition except when disease or injury directly affects the central nervous system. In my studies of eminent scientists I made no attempt to classify my subjects in terms of physical types, but I did find that the very small group of theoretical physicists had unusually poor health histories, and that they and the social scientists seemed to have rather more than the usual number of physical problems, in terms of extremes of height or weight, or other developmental anomalies. This was not true of the rest of the scientists, and may have special relevance to these groups. Certainly the weight of the evidence is clearly that superior intellectual performance does not tend to be associated with inferior physical condition.

FACIAL APPEARANCE

There have been individual employment managers and personnel directors who believed that they could select men for different jobs by various facial characteristics. There seems to be no evidence whatever that selection on this basis has any validity.

Studies by Landis and Phelps, and by Viteles and Smith, investigated the prediction of vocational aptitude and success from photographs, one with college men as subjects and the other with employment managers and interviewers. In neither were the subjects successful beyond chance.

Gahagan used photographs of men in four occupations, science, letters, politics, and business. These were shown by pairs to 73 students who knew in each case which two occupations were represented, and were required to guess which man belonged to which occupation. There were 3,000 judgments in all. He obtained somewhat more correct judgments than would be expected by chance, but the reasons given by the judges seemed to have little or no significance, the choices having apparently been entirely impressionistic. He thought that the results did not warrant the suggestion of the existence of occupational types. Child did a similar experiment, with a series of 86 magazine pictures of men in the same four occupational classifications. His results were similar to those of Gahagan. He had included two different photographs of each of two individuals, and these were assigned to the same occupation only one-fourth of the time. Apparently what is suggested by these investigations is the existence of social stereotypes of a not very rigid sort. It is quite probable that this governs the selection of pictures for publication, that is, the one that most nearly represents the stereotype of men in his profession (see illustrations for ads) is likely to be the one selected for publication.

Beyond this, it is of course unquestionably true that personal appearance is a factor in securing a job. So far as facial characteristics themselves are a factor, it is usually as a reflection of the personal prejudices of the man who is doing the hiring. This generally has no direct relevance to the character of the job (such jobs as those of receptionist, model, and chorus girl would be exceptions) and is of considerably less importance in keeping the job.

SPECIAL PHYSICAL ABILITIES

Some jobs require particularly fine neuromuscular coordinations, such as may be tested by pinboards or similar apparatus. These specialized abilities, however, although having some importance for a very few occupations, are never the only requirement for any occupation and are only rarely an essential one.

Other special capacities, such as particular sensory acuities, are also of limited importance. Only the extremes seem to matter. Tea-tasters presumably must have not only a naturally high taste sensitivity, but it must also be highly cultivated. A number of laboratory tests depend upon smell, color perception, and so on, but normal acuity is usually sufficient, and only persons with distinctly below-average acuity would be unsuitable for such jobs on this account. Acuity much above the minimum level may not even improve performance with respect to the discriminations required.

Various special abilities involved in artistic performances may be based in sensory capacities. Competent musical performance generally requires better than average pitch discrimination, but this is much more important for some instruments than for others, and general acuity of hearing need not be especially high. Functional acuity can even be lost without preventing performance in composition (as in Beethoven), but presumably acuity of imagery must remain.

In the Army Air Forces' selection program, several tests of eye-hand coordination and one of discrimination-reaction-time were used very successfully as parts of the Aviation Cadet Classification Battery. These were specifically designed for the purpose, and are not intended to discriminate any general capacity such as speed of reaction time, if there is such a generalized capacity. Undoubtedly such specific capacities are of some importance in a number of occupations, and the possibilities are now being developed, but no general statements can be made about them at this time.

SPECIAL DISABILITIES

Unlike special abilities which may qualify their holder for desirable, unusual jobs, special disabilites are more likely to function only as limiting factors. Blindness, deafness, orthopedic disabilities, chronic illnesses all have very direct effects upon occupational selection. Some of these effects, it is true, are the result of inadequate knowledge on the part of everyone, the disabled, the employers, and society generally, as to just what performance limits are the necessary results of certain disabilities, but some of the effects are genuinely inevitable. A man with one arm cannot perform activities which really require two fully functional ones, but he can do many more things with one arm and one prosthetic device than might be imagined. Furthermore there are a large number of occupations for which a second arm is really unnecessary.

In order to succeed, particularly at high-level jobs, those with special disabilities must usually be better trained, have more ambition and drive, and be more resourceful than normal competitors. They require, in addition, to learn to tolerate day-by-day situations of frustration and devaluation. Nevertheless, the success of thousands of them shows that it can be done. Fortunately there have been increasingly numerous studies in the general field of disability and occupational possibilities. Only a few of them will be cited here as examples.

Anderson made a study of 4,404 persons with orthopedic disabilities. They were persons who had come to an agency for assistance in vocational placement, and averaged 31 years of age. They found employment in 635 different occupations, classed by the agency as:

Unskilled	46%
Semi-skilled	23%
Skilled	25%
Clerical	6%

The range of occupations that have been successfully followed by the totally or nearly totally blind is also very large. A certain number in this particular group work in agencies for the blind, but many are in direct competition with seeing persons. Dabelstein reports the percentage distribution by major occupational groups for blind persons rehabilitated in 1946 and 1947, and compares this with the experienced labor force reported in the 1940 census. These figures are given in Table 5.3. The major differences in proportions are in the greater relative numbers of the seeing in agricultural jobs and of the blind in the unskilled group. It is somewhat surprising to note how many of the blind can manage clerical and sales jobs, and perform adequately in various skilled classifications.

The effect of chronic illnesses upon employment is more diffuse. It is probably of greater importance in such matters as being able to hold a job in spite of a high degree of absenteeism, and of long periods of complete interruption of the working life, than for selection of

TABLE 5.3. PERCENTAGE DISTRIBUTION BY MAJOR OCCUPATIONAL GROUPS FOR BLIND PERSONS REHABILITATED IN 1946 AND 1947, COMPARED WITH EXPERIENCED LABOR FORCE, 1940 (FROM DABELSTEIN)

	Blind		Labor Force
	1946, %	1947, %	1940, %
Professional and semi-professional	10.7	8.4	6.8
Managerial	3.4	4.2	7.4
Clerical and sales	15.8	23.1	15.9
Service	7.2	6.3	11.9
Agriculture	3.4	5.2	7.0
Skilled	16.0	13.8	11.4
Semi-skilled	19.7	17.1	18.2
Unskilled	22.4	21.5	8.9
Occupations not reported	1.4	0.4	2 5

occupations as such. What is more important in these circumstances is not the specific occupation but the circumstances of the particular job, whether the individual's duties can be readily taken over by others, or can be easily interrupted. Serious chronic or recurrent illnesses would rule out the possibility of occupations requiring particular physical abilities. The effect of mental illnesses would be similar so far as tolerance of absences and of prolonged interruptions is concerned.

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CHAPTER 6

Psychological Differences

In this and the following chapter we shall review briefly the nature and occurrence of such psychological characteristics as have been measured by tests. In Part III we shall go into greater detail about the relationship between psychological test material and occupational selection, so far as it has been studied. Our purpose in this chapter is to accumulate background on the nature of these variables, their occurrence in the population generally, their interrelationships, and their broad relationships to occupations.

We shall discuss intelligence, special abilities, personality, and interests, and shall not stop every time to qualify these terms, to indicate that in each instance what we are talking about is not an abstract quality or trait in a substantive sense, but whatever it is that a particular psychological test tests. We draw certain inferences from tests regarding the psychological facts, but our raw data are tests or observations.

Tests referred to in this and later chapters will not be described beyond a brief indication of their character and purpose. The glossary, pp. 323–326, contains descriptions and sources for all tests.

INTELLIGENCE

Since intelligence tests were first developed, our concepts of the nature of intelligence have undergone considerable transformation, and there is still no very exact consensus. For some time we worked on the hypothesis that intelligence was general, independent, and substantive in nature, that any one person had just so much which could be measured, more or less accurately, and that this amount was, except in extraordinary circumstances, unalterable. Almost all these ideas have changed. We now speak of various "factors" of intelligence, all more or less independent of each other and of "general intelligence." The number of factors, their definition, and their hierarchical relationships are still somewhat in dispute.* We need not go into these problems in detail. Most investigators agree that there is at least one "verbal" factor, a "spatial" factor, and a "numerical" factor, although they do not always define them in the same way or measure them by exactly the same sorts of tests. Thurstone's battery of Primary Mental Abilities, for example, includes tests for the following: (V), Verbal meaning; (S), Space; (R), Reasoning; (N), Number; (W), Word fluency. He has also given Perceptual speed, Motor ability, and Memory ability as factors.

Nor do we consider any longer that "intelligence" is completely independent of other aspects of the personality. It is still true that we try to measure it independently, but there is a considerable probability that this will be changed in the relatively near future. Wechsler devoted his Presidential Address to Division 12 of the American Psychological Association to a discussion of "Cognitive, conative and non-intellective intelligence," pointing out that general intelligence is a function of the personality as a whole, and that other than strictly cognitive aspects are involved.

As to the "constancy of the IQ" there seems now to be some consensus. This is that in the early years we cannot effectively predict what any person's IQ will be 10 years later, but by the time the age of 7 or 8 is reached we can predict with as much efficiency as we ever can. This still does not mean that IQ's scored by the same person at different ages will not vary, but only, provided that the tests are exactly comparable and the subject is cooperating, that the variation will, under normal circumstances, be minimal and unimportant. We know now, however, that there are many conditions, some temporary, some permanent, which do affect the measured IQ. (Part of the skill of the clinician lies in his ability to judge when any of these conditions may be operating.) Emotional disturbances of any severe sort may affect it and mental illness will, but the effect will be different in degree and kind with different sorts of disturbances. (Roe and Shakow, Rapaport.) Severe physical illnesses, especially any affecting the central nervous system, will affect performance on intelligence tests in varying ways.

What is perhaps more important is that there is good evidence that children raised throughout their early years in a seriously deprived environment (for whatever reason) will almost certainly not reach the level of development of intellectual functions which would otherwise be possible for them. We do not know whether all intellectual factors are equally affected, nor to how great an extent the effects of early deprivation may be overcome by later plenty or by special techniques. It seems to be true that long continued deprivation will reduce the need for intellectual stimulation, so that if it does become available later the individual may no longer react to it.

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* A very comprehensive yet brief and very readable discussion of these problems is to be found in Vernon, 1950.

Some idea of the present distribution of intellectual functions in the active, adult, male population of the United States can be gained from Army data. The Army General Classification Test (AGCT) consists of three parts, vocabulary, arithmetic problems, and block counting, and the scoring is so arranged that the mean is 100 and the standard deviation is 20. The results shown graphically in Fig. 6.1 are based on the scores of all enlisted men for 5 years beginning in March, 1941, and totaling over 8 millions.

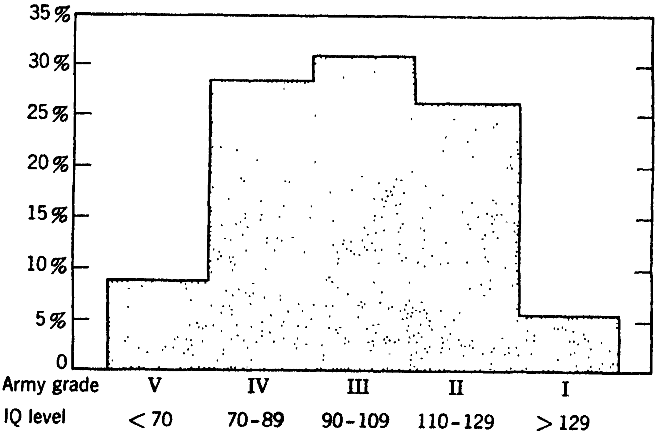

Fig. 6.1. Distribution of enlisted men, by grades, on the Army General Classification Test. (Figure from Boring, Langfeld, and Weld, data from Bingham.)

That intelligence is a factor in occupational selection is a commonsense observation and has been demonstrated by many studies. There is a correlation between level of intelligence and amount of education, although it is far from a perfect one (see Chapter 9). Generally, higher-status occupations require higher levels of both intelligence and education. A more detailed breakdown of the relation between intelligence and occupation will be given in Chapter 11. For our present purposes the data given in Table 6.1 are sufficient. Clark and Gist located 2,423 persons who had been given the "Terman Test" (apparently the Terman Group Test of Mental Ability) in rural Kansas high schools 13 years earlier, when they were of a median age

TABLE 6.1. INTELLIGENCE AND OCCUPATION

(percentage of 2,423 persons in each of 3 IQ intervals by occupation)
(data of Clark and Gist)

		IQ			
Occupational Group	*N*	Mean	<95	95-104	>104
Professional (except teachers)	158	102.85	25.32	37.33	37.35
Clerical	166	100.00	34.34	33.74	31.92
Teachers	207	99.28	38.17	31.40	30.43
Salespeople, proprietors	233	96.61	44.19	32.62	23.19
Skilled workers	131	96.18	45.80	32.83	21.37
Housewives	857	95.44	49.94	30.81	19.25
Semi-skilled, unskilled	247	93.28	58.30	27.53	14.17
Farmers	345	92.75	58.84	29.85	11.31
Housekeepers and unemployed	79	91.39	63.29	31.65	5.06

of 16. They classified them by the occupations they were then following. The table shows for each occupational group the number, the mean IQ, the percentage between 95 and 104 IQ and the percentages above 104 and below 95. Since this was a rural group, the means may be low for the national average, but they indicate something of the way in which IQ and occupation may be related. It is particularly important to note the degree of overlapping for all these groups. About one-third of the teachers, for example, have lower IQ's than the mean of the semi-skilled and unskilled group. Note, too, that 14 per cent of the semi-skilled and unskilled workers have IQ's above 104. This raises serious questions as to whether we are making maximal use of our intellectual resources.

Similar overlapping is shown graphically in Fig. 6.2. The data are from the report by Harrell and Harrell on AGCT scores of enlisted men from different civilian occupations. In the figure the range (single line) and one standard deviation (the triple line) on either side of the mean (the cross line) are shown for each of the 20 selected occupations.

Another way of estimating relationships between occupations and intelligence is to note the minimum mental age required for successful (retaining the job) pursuit of various occupations. Ungar and Burr give this for simple occupations; their data are shown in Table 6.2.

It is hardly necessary to mention that there is more to the holding of a job than just having the minimum intelligence necessary to perform the particular tasks. Ghiselli and Brown hypothesized that intelligence tests will give either positive or zero predictions of occupational success, but will not give negative predictions. To check this,

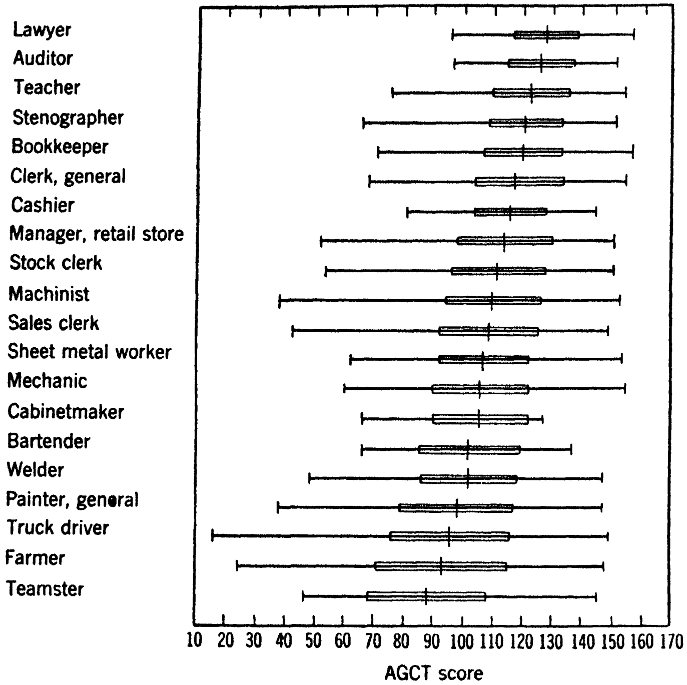

Fig. 6.2. AGCT Means, Standard Deviations, and Ranges for enlisted men from 20 civilian occupations. (Data from Harrell and Harrell.)

they reviewed a number of studies and assembled 185 correlations between an intelligence test score and some index of proficiency on the job. They found their hypothesis supported for 7 of the 8 groups of occupations studied (clerical workers, supervisors, salesmen, protective services, skilled, semi-skilled, unskilled) but not for sales clerks. They also noted a marked variation in findings reported by different investigators for each occupational group. Generally, intelligence

TABLE 6.2. MINIMUM MENTAL AGES FOR SIMPLE OCCUPATIONS (FROM UNGAR AND BURR)

Mental Age, years	Occupation
5	Packing, garden work, scrubbing floors, simple washing
6	Light factory work, light domestic work
7	Assembly work, errands, pasting, farm work
8	Cutting, folding, garment machine operation, laundry, cooking
9	Hand-sewing, press operation, filing, stock work
10	Routine clerical, general housework, machine operation, electrician's helper, painter
11	Selling, millinery work, janitorial work

tests have been most useful in the selection of clerical workers and offer promise with supervisors, salesmen, and skilled workers. They are of little value for sales clerks, semi-skilled, and unskilled workers.

SPECIAL ABILITIES

In addition to the primary mental abilities, mentioned in the preceding section, a number of authors list other abilities that are pertinent to occupational selection. A factorial analysis of 59 different occupational aptitude tests, given to 2,156 subjects, found 11 factors, as listed below. (Staff, Division of Occupational Analysis, War Manpower Commission.) The first three are similar to, if not identical with, Thurstone's factors V, N, and S.

(V) Verbal meaning
(N) Number
(S) Manipulation of spatial relations
(O) A factor with the properties of G (general intelligence) but broader than Thurstone's reasoning factor
(P) Perception, involving geometrical figures
(Q) Perception, involving words and numbers
(A) Aiming, accuracy, or precision of movement
(T) Speed
(F) Finger dexterity
(M) Manual dexterity
(L) Logic, a narrow reasoning factor

By combining "different labels from several classifications," Hahn and MacLean classify abilities into the following groups:

Academic, scholastic, or verbal
Numerical and mathematical
Spatial
Scientific
Mechanical
Manual skills
Physical agility
Artistic
Musical
Social
Clerical
Executive
Practical

They point out that for some jobs some of these abilities are of no importance and may even be undesirable. They also point out that, whereas some tasks demand social ability of a high order, there are other occupations, such as artistic creation, or scientific research, that demand asocial or occasionally even antisocial attitudes and personal isolation in order to concentrate on the job in hand.

The authors of the Minnesota Occupational Rating Scales (MORS) have selected seven aptitudes or abilities for rating for their significance in different occupations. These are:

Academic ability (largely verbal)
Mechanical ability
Social intelligence
Clerical ability
Musical talent
Artistic ability
Physical agility

Each of these abilities is rated on a 4-point scale (A, B, C, or D), and they have given a rating (the pooled judgment of vocational psychologists) for each of 432 occupations.

Lorge and Blau, on the basis of an earlier edition of the MORS (this did not include ratings on clerical ability and physical agility), attempted to rate the major occupational groupings in terms of the demands of the occupations on these abilities. Their results are given in Table 6.3. The major occupational groupings are defined by their code numbers in the Dictionary of Occupational Titles (DOT).* Note that musical talent and artistic ability in particular are irrelevant to large numbers of occupations.

It should be noted that many studies are based on the predictive power of tests for *trainability* rather than for *job proficiency*. This is in part because students of any variety are easier to obtain as subjects than are active workers. Nevertheless, it is a point that must be kept in mind in evaluating all such studies. Brown and Ghiselli analyzed the results of 127 studies and reported that there was no certainty that a test which would predict a worker's ability to learn a job would also predict how well he would do the job when he was trained. This emphasizes again the fact that much more is involved in occupational selection and success than abilities or aptitudes.

* The Dictionary of Occupational Titles is prepared by the Division of Occupational Analysis of the U. S. Employment Service. It contains a classification of occupations, and descriptive information about most American occupations, the duties and skills involved, equipment and material used, working conditions, and hazards.

TABLE 6.3. ESTIMATED ABILITY REQUIREMENTS OF MAJOR OCCUPATIONAL GROUPS (FROM LORGE AND BLAU)

		Rank in Estimated Ability				
DOT Code	Occupations	Abstract	Mechanical	Social	Musical	Artistic
0-0–0-3	Professional	1	4	3	1	2.5
0-7–0-9	Managerial	2	6	2		5
0-4–0-6	Semi-professional	3	2	5	2	1
1-5–1-9	Sales	4	14	1		
1-0–1-4	Clerical	5	13	8		
4 and 5	Skilled	6	1	9	3	2.5
2-6	Protective services	7	11	4		
3-0–3-4	Agriculture, horticulture	8	5	13		4
6 and 7	Semi-skilled	9	3	12		6
2-2–2-5	Personal service	11	9	6		7
2-0	Domestic service	11	8	7		
3-8	Fishery	11	11	14		
2-8, 2-9	Building services	13	11	10.5		
8 and 9	Unskilled	14	7	10.5		

There are sex differences in the distributions of scores of different special aptitudes. Many studies at different age levels have reported males superior in numerical tests, and females superior in verbal tests and generally in immediate memory tests. There are also large and significant differences in mean performance on clerical aptitude tests in favor of females and in mechanical abilities in favor of males (see, e.g., Schneidler and Paterson).

Morrow made a factor analysis of the relations among tests of musical, artistic, and mechanical abilities. His subjects were 112 male psychology students, and his tests were: the Kwalwasser-Dykema Tests of Musical Ability; Stenquist Picture (Group) Test II, Meier-Seashore Art Judgment Test; Lewerenz Test in Fundamental Abilities of Visual Art, Tests 1, 2, 6, 7, and 8. Factor analysis produced three relatively unimportant factors, and the following two important ones:

Factor 1. Common to all artistic and mechanical tests; an analysis of spatial relations.
Factor 2. Common alone to most of the musical tests.

Andrew found clerical ability relatively independent of academic, spatial, and dexterity abilities.

The most common tests for some of these abilities, particularly clerical, manual dexterity, mechanical, spatial, artistic ability, and musical talent, are exhaustively discussed by Super (1949), with particular reference to their use in vocational guidance. The student is referred to his book for these details.

IMAGERY

One variable so far little studied in its relation to occupational psychology is that of differences in imagery. There is only one study relating directly to its significance for vocations, and that is very limited. Discussion of it is included here because the results seem to be very suggestive and to offer leads worth following up with other groups.

Since the controversy over imageless thought in the 1920's, there has been relatively little work of any sort done on imagery. We do know that people vary in the amount and kind of imagery they use, and in the clarity of the images. So far, however, no one has devised any effective means for testing these differences or even for rating them very adequately. About all that we can determine, by questioning, is what kind of imagery the subject employs the most. The commonest kinds are visual and auditory verbal. By visual imagery we mean thinking in terms of pictures, which may be of concrete objects, symbols, or perhaps diagrams. Auditory verbal imagery means more or less talking to oneself, without making any sound, hearing words in the mind. Then, of course, there is imagery in terms of taste, smell, touch, and so on. Almost everyone can and does employ different forms of imagery at different times, but apparently people have preferred forms, that is, forms which they use more often, and usually with greater facility, than other forms. And apparently everyone makes more or less use of imageless thought, of thinking unaccompanied by pictures, sounds, smells, etc., but a "feeling of relationships," a sense of something going on, which later may get translated into some sort of imagery.

We do not know what the basis for this differentiation is, why some people prefer some kinds of imagery and others prefer another kind. Short thinks that imagery types may be of an inherited character, because his researches have demonstrated that they are associated with differences in alpha rhythm in brain waves, which are believed to be hereditary. The study throws no light on this point. That preferred imagery seems to be associated with father's occupation can be explained in either hereditary or environmental terms, or both.

What seems to be of importance for occupational psychology is the

TABLE 6.4. ASSOCIATION BETWEEN FIELD OF SCIENCE AND IMAGERY TYPE (ROE)

	A. Visual[a]	B. Verbal[b]	C. Imageless[c]	Total
Biologists	10	4	3	17
Physicists	10	4	4	18
Psychologists and anthropologists	2	11	6	19
Total	22	19	13	54

$Chi^2 = 11.65$, $P = .05\text{-}.02$

[a] A includes subjects using visual imagery, or this with visual symbolization or imageless thought, or both.

[b] B includes subjects using verbal imagery, or this with verbal symbolization or imageless thought, or both.

[c] C includes only subjects who describe no visual, verbal, or other imagery modality and are classed as using imageless thought only.

significant association, in a group of eminent scientists, between field of science and imagery type. The data are shown in Table 6.4. (Roe, 1951.) The men in each group who deviated in this respect from the majority of that group also tended to be unlike them in interests and in the particular ways in which they worked or the special topics they worked on. There was also some difference in intelligence and personality test results between those whose imagery was predominantly verbal and those with predominantly visual imagery.

With respect to intelligence and special abilities, then, we may say that they seem to be distributed approximately normally in each sex. Although it is clear that there are mean differences in intelligence for different occupations, the degree of overlapping is enormous. As for physical capacities, then, differences around the mean of the general population are of relatively little significance, as far as separate capacities go, although the pattern of a number of them may have significance.

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CHAPTER 7

Psychological Differences (Continued)

PERSONALITY

There is no such consensus in the field of personality measurement as now has been at least partially attained in the field of the measurement of intelligence. One difficulty is that there is no agreement on basic theory. We meet in exaggerated form here the sort of circular problem that bedevils much of psychology and other sciences, that is, theory depends in large part upon observation and measurement, but what is to be observed and measured is determined by theory.

In the field of personality measurement what has happened, apparently, is that the sort of measuring devices that had been useful in intelligence testing were first adapted to "personality" measurement. This type of approach is now exemplified in the personality inventories. From it has developed a rather vague "trait" theory of personality, which has more recently been put on a rigorous basis in Cattell's work. Cattell's tests, however, have not been used in any occupational grouping.

There has also been another line of approach. This is through application of personality theory, particularly analytic theory. Although the Rorschach, the best-known of the projective techniques, was developed in the first place as a technique for studying imagination, many of the later projective techniques such as the Thematic Apperception Test and the Blacky Pictures have had a basis in theory. Even so, relationships between theory and test have been more secondary than primary. There has so far been no attempt to devise tests or to adapt or interpret any of the existing tests in accordance with Maslow's theory of personality development.

Under these circumstances it is impossible to describe pertinent personality variables as easily as intellectual ones, or to discuss their distribution in the general population or in special groups with any confidence.

No truly comprehensive work has been done with personality tests as such in the field of occupational psychology. There are many studies of particular groups by personality inventories, and a few with projective and other techniques. Although the evidence is not extensive there nevertheless seems to be no doubt that some specialized occupations, at least, do attract persons who resemble each other in some personality characteristics. How far this is true of occupations generally we do not yet know, although we shall see that there seem to be some regular patterns. Although those who follow a particular occupation may tend to show certain personality patterns more often than other patterns there will be many in the occupation who do not have a modal pattern. My own studies suggest that the deviates may have a particular contribution to make, in part because they may look at problems in slightly different ways than the others. It is probable that some basic correspondences, in interests at least, are essential, and that the extent and number of deviations from the mode vary enormously from one occupational group to another.

Certain kinds of people are genuinely unsuited to some kinds of occupations, and personality and interest factors are of major importance in determining this. It is certainly true that there is more than one job at which anyone could work contentedly, but it is probably also true that only one or two kinds of occupations would prove congenial to each person. Although we have as yet no really adequate understanding of these relationships, a number of studies have used job families of various sorts which are essentially attempts to group together occupations with similar requirements of the person. The Minnesota Employment Stabilization Research Institute classified occupations into the following broad divisions:

I. Social service: workers committed to ideal or principle, to whom salary and personal gain are secondary.
II. Business detail: maintenance and efficiency of a business.
III. Business contact: direct influence on others.
IV. Business service: contact for giving information or assistance.
V. Professional, technological, and special: workers with special trade or set of skills.
VI. Ideational or lingual: workers occupied in transmitting ideas.

In addition Strong's groups of occupations (see Table 7.2) indicate job families in this sense.

Another problem enters into the difficulties of analysis of previous research for this purpose. Except in such jobs as assembly line production where there is minimal chance for individual variation, how the job is done and sometimes even what is done under the same job heading will differ with the person who holds the job. The sort of approach now used by Flanagan in analyzing "critical incidents," that is, in assembling descriptions of behavior in particular instances on the job, can help to lessen the difficulties here.

Another difficulty is that present techniques, especially projective ones, are apparently influenced to a greater degree than intelligence tests by socioeconomic background, and we have as yet no adequate normative data on this point (Auld).

It is a matter of common-sense observation that a very disturbed person will find it difficult to function occupationally as well as socially. Some problems will clearly affect certain types of work more than others. We have very little information on this. As extreme examples, it is obvious that anyone who suffers in the least from claustrophobia should not attempt to be an elevator operator, but a compulsive neurotic with a mild phobia about dirt might make an excellent cleaning woman. There have been a few studies of relations between occupational success and general personality adjustment which will be reviewed in Chapter 22.

Busold has suggested that among the deep psychological factors of importance for vocational choice and success which have been generally overlooked are: drives, positive and negative, against restraint; expressed aims and ambitions; strength of will, self-confidence, and initiative; work types, e.g., the steady, the one who works best under direction vs. the one who must see his goal, the slow and exact vs. the rapid and careless, the persistent vs. the fatiguable, etc. He points out that we know little of the interrelationships of these factors, and of the vocations to which they are pertinent.

Attempts to get at these more deep-seated factors have been few, and they are necessarily time-consuming and difficult. They require careful and prolonged clinical studies, but they are probably essential to any real understanding of the relationships between personality variables and occupations. The few studies available have concerned limited groups and will be discussed in connection with specific occupations.

Teevan conducted an experiment to determine whether or not personality factors are correlated with choice of a major field in college. He used three broad groupings of college majors, and scores on the Blacky Pictures. (This test is interpreted in terms of psychoanalytic theory.) He found some significant differences: those in literature had higher disturbance scores on Oral Eroticism than the other divisions; the social sciences division had higher disturbance scores on Oral Sadism, Oedipal Intensity, Guilt Feelings, and Anaclitic Love Object; the science division had the lowest disturbance scores in nearly all categories. One difficulty with this interpretation is that the Blacky test is concerned only with disturbances in personal relations. The results with these groups seem quite in accord with other observations, i.e., associations between verbalization and oral eroticism have been noted before; persons in the social sciences are likely to be or to have been struggling with parental relationship problems. Science division majors come out low on disturbance scores largely because they avoid problems in this area; they are just not interested in personal relationships, or they have effectively retreated from them.

Personality inventories and vocation

There have been a number of studies with personality inventories, the Bell, the Bernreuter, the Minnesota Multiphasic Personality Inventory (MMPI), and others. Most of these, too, have applied to one or a few occupations, and will be discussed in relation to the specific ones. The emphasis has usually been upon their use as selective devices, as is indeed true of most of the data available in this general field. We are not concerned with selection, as such, but it is evident that information derived from such studies is relevant to the general study of occupations and personality.

Ghiselli and Barthol have surveyed the use of personality inventories in the selection of employees, and have combined the results of 113 studies into mean validity coefficients for various occupational groups. Their data are given in Table 7.1. Inventories seem to be most effective with sales personnel and least satisfactory with supervisory, but the correlations are extremely low for validity coefficients.

Studies of the relationships between personality inventories and

TABLE 7.1. MEAN VALIDITY COEFFICIENTS OF PERSONALITY INVENTORIES FOR VARIOUS OCCUPATIONAL GROUPS (AFTER GHISELLI AND BARTHOL)

Occupation	Mean r	Total N Cases	Total N r's
Salesmen	+.36	927	12
Sales clerks	+.36	1,120	8
Trades and crafts	+.29	511	8
Clerks	+.25	1,069	22
Protective workers	+.24	536	5
Foremen	+.18	6,433	44
Service workers	+.16	585	6
General supervisors	+.14	518	8

vocational interests, as shown by choices or scores on interest tests, are reviewed in the section on interests.

INTERESTS

Interests may be thought of as one aspect of personality, but since tests for them have been separately developed we shall consider them separately. The term "interest" has been used in various ways. Super (1950) has classified these as expressions, manifestations, tests, and inventories of interests.

He defines expressed interest as the verbal profession of interest in an object, activity, task, or occupation. There has been relatively little research in this area; what there is has shown that the expressed interests of children ("I'm going to be a policeman when I grow up") or adolescents are unstable, but that in adults they are quite stable.

Manifest interest he takes to mean actual participation in an activity or occupation. If a person spends all his spare time on a hobby, presumably something about it interests him. Manifest interest has often served as a criterion for interest tests or inventories.

Tested interests refers to interests as measured by objective tests. The assumption here is that interest in an activity will result in an accumulation of information about that activity, and the amount and type of information can be measured. An example of this sort of test is the General Information Test which is part of the Air Force's selection and classification battery, and which differentiated effectively between pilots, navigators, and bombardiers.

Interest inventories are questionnaires in which the items are given an experimentally determined weight, yielding a score that represents a pattern of interests. The best-known instruments of this type are Strong's Vocational Interest Blank, with forms for men and women, and the Kuder Preference Record. Our discussion of interests will be primarily concerned with interests as inventoried. Work with the Strong Blank, up to 1943, was summarized in Strong's book, *Vocational interests of men and women;* work with the Kuder Preference Record up to 1947 was summarized by Super (1947). There have been extensive studies since these summaries, but the basic findings of the earlier studies have been extended rather than altered.

Interests are of importance for occupational psychology because it has been found that occupations can be differentiated in these terms. So far, concentration has been on high-level occupations. It has been shown that in each instance the men engaged in an occupation, as a group, have a characteristic pattern of likes and dislikes different from the patterns shown by men in other occupations.

The Strong Vocational Interest Blanks can now be scored for the occupations listed in Table 7.2. Note also how these are placed in related groups. There are as yet no Group Scales for women. Some of the more recent keys for the women's occupations have not yet been given Group assignments.

TABLE 7.2. SCORING KEYS AVAILABLE FOR STRONG VOCATIONAL INTEREST BLANKS (1954)

For Men

Group I	Group II	Group III	Group IV
Group Scale Artist Psychologist Architect Physician Dentist Osteopath Veterinarian	Group Scale Mathematician Engineer Chemist Physicist	Production manager	Farmer Carpenter Aviator Printer Mathematics-physical science teacher Policeman Forest service Army officer
Group V	Group VI	Group VII	Group VIII
Group Scale YMCA physical director Personnel manager Public administrator YMCA secretary Social science teacher City school superintendent Minister Vocational counselor	Musician	Certified public accountant partner	Group Scale Senior CPA Junior accountant Office worker Purchasing agent Banker Pharmacist Mortician
Group IX	Group X	Group XI	Additional Scales
Group Scale Sales manager Real estate sales Life insurance sales	Group Scale Advertising man Lawyer Author-journalist	President, manufacturing concern IBM operator	Masculinity-femininity Maturity of interest Occupational level Specialization level

For Women

Group I	Group II	Group III	Group IV
Physician	Dentist	Mathematics-physical science teacher	Nurse
Group V	Group VI	Group VII	Group VIII
Housewife Office worker Secretary-stenographer	Life insurance sales	Social science teacher YWCA secretary	Social worker Lawyer
Group IX	Group X	Additional Scales	
English teacher	Librarian Artist Author	Elementary teacher Physical education teacher Dietitian Laboratory technician Home economics teacher Psychologist Occupational therapist Buyer Business education teacher	

Interests are not completely independent psychological entities; they are multiply determined. They are the things the individual likes, pays spontaneous attention to, observes, thinks about, or does with satisfaction and enjoyment. People are, on the whole, more alike than they are different in interests, but the differences are important. Strong summarizes this as follows:

> Because research regarding interests has been so largely concerned with group differences, it has not been realized that likenesses among the interests of individuals are far more striking than differences. All groups so far studied agree very well in their interests. Men regardless of age and economic or occupational status agree on all types of items to a high degree. There is also good agreement between the interests of men and those of women of corresponding ages. Only when differences in age and sex are both involved do we find correlations approximating zero for certain groups of items. The least similarity of interests occurs between 15-year-old boys and adult women: even here the correlation is .48 when all items on the interest inventory are considered [p. 46].

Interests change with age, but become relatively stabilized in post-adolescence. They have some relationships to abilities, but are more closely related to attitudes. Sex differences are marked. To what extent interests may be affected by physiological variables and to what extent they are influenced by genetic factors is unknown. They differ with the environmental background of the individual.

Analyses of interests

One of the earlier studies attempting to analyze interests in terms of underlying factors was made by Thorndike. He used an 11-point scale, of 16 items, on which 122 college graduates rated their interests. Examination of the correlations led him to conclude that there is a great specialization of interests and that the group factors seemed more related to the characteristics of the situations responded to than to unitary "traits" in the persons. He suggests the following factors:

1. Average or total tendency to enjoy. Apparently opposed to interests in sedentary games and a regular job.
2. Liking for social intercourse, including talking.
3. Liking for utility.
4. Liking for the work of ideas and fancy.
5. Liking for music.
6. Liking for outdoor sport.

More recent studies have been based on factor analyses. Thurstone analyzed Strong's data on 18 professions, and decided that the intercorrelations could be accounted for by 4 factors. Darley, 10 years later, and with more scales available, found 6 factors. Strong made factor analyses of 36 of his scales. Vernon (1949) on the basis of preferences between paired occupations (all of them high-level) extracted 4 bi-polar factors, which he compares with Spranger's types and with Strong's groups. The Kuder Preference Record gives scores for 10 types of interests which, although not arrived at by factorial methods, are comparable to factors. Guilford and his associates report a factor analysis study of human interests, including a number of non-vocational ones, which might be interpreted as temperamental factors rather than as interests as usually defined.* The factors reported in these studies are given in Table 7.3.

TABLE 7.3. SUGGESTED CORRESPONDENCES IN ANALYSES OF INTEREST FACTORS

Thurstone	Darley	Vernon	Strong	Kuder	Guilford
Science	Technical	Scientific vs. display	Science	Scientific	Scientific
People	A. Welfare, uplift B. Welfare, uplift	Social welfare vs. administration Gregarious vs. isolated	People	Social service	Social welfare
Business	Business detail CPA	Administration vs. welfare	Business system	Clerical Computation	Clerical
	Business contact		Contact	Persuasive	Business
Language	Verbal	Verbal vs. active	Language	Literary	
		Isolated vs. gregarious	Things vs. people	Mechanical	Mechanical
		Display vs. science		Artistic Musical	Aesthetic appreciation
		Active vs. verbal		Outdoor	Physical drive Outdoor work

It can be seen that there are major agreements. All analyses separate scientific, linguistic, social, and business interests in one way or another. What further breakdowns are found depends largely upon the material analyzed. For example, artistic and musical interests will not be factored out of a scale which does not include enough relevant items. Guilford's physical drive factor and Vernon's active vs. verbal factor may correspond, but this is largely a guess from the names given the factors and the items having high loadings. Some of the other correspondences suggested by the table were arrived at in the same way. It should be noted that naming factors may be a somewhat tricky business. The names are largely impressionistic;

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* The non-vocational factors are: adventure vs. security; cultural conformity; need for diversion; autistic thinking; need for attention; resistance to restriction. In this group he also includes preference for outdoor work and physical drive, which are listed in Table 7.3. Many of these obviously have vocational implications, but their relationship to factors from other studies is not evident.

they are intended to convey the essence of the factor as the experimenter sees it. Two investigators may mean different things by the same word, and it is not necessarily true that everything subsumed under such a name in ordinary speech is relevant to the factor.

Interests and heredity

There have been only a few studies of family resemblances in interests (Strong, 1943; Berdie, 1944; Forster; Dvorak; and Carter), and there are various problems which make evaluation of the results difficult. Correlations between inventoried interests of fathers and sons ranged from +.11 to +.48 in Strong's study, averaging +.29, with random pairs intercorrelating −.03. In Forster's study father-son correlation ranged from .00 to +.48 with a mean of +.33. Super suggests that social position must be taken into account in interpreting these results, holding that socially acceptable aspirations match parental occupation only in the upper groups. Carter studied fraternal and monozygotic twins, finding intercorrelations of interests to be +.28 and +.50, respectively. It would seem then that there is some hereditary influence, but this cannot be the whole story.

Sex differences in interests

That there are sex differences in interests is a matter of common observation as well as of test. Indeed, several masculinity-femininity scales have been constructed on this basis. As we remarked in Chapter 4, in this sense masculinity and femininity are a continuous variable, and cannot be dichotomized. The various studies of differences in interests corresponding to physical sex differentiation have been in close agreement (for example, Terman and Miles; Carter and Strong; Yum; Kuder; Traxler and McCall; Strong, 1943; Finch and Odoroff). In summary, men are more interested in scientific activities, mechanics, physical activity, politics, and sales activities than women are. Women show greater interest than men do in people, social and clerical work, teaching, literature, art, and music. That these differences are of importance for vocational choice is obvious.

Sex differences in attitudes which have vocational significance appear very early. Tyler found them, both in specific items and in organizations of interests, in first-grade children. Her interests were:

A. Active outdoor play.
B. Indoor play with toys.
C. Paper-pencil-crayon activity.
D. Helping adults with work.

Interests A, B, and C were relatively independent for both boys and girls, and all correlated negatively with D. D has a high negative correlation with masculinity; even at this age helping around the house is a feminine activity. Interests and Primary Mental Abilities were significantly correlated for boys, but not for girls. This suggested to her a role theory of the patterning of interests.

> Since the difference between the sexes is one of the earliest differences to become apparent to children, one might expect their attitudes about what things are appropriate for them to do might be related to these differences before other role factors such as class concepts and occupational stereotypes begin to influence interests. The fact that special abilities correlates with interests in boys but not in girls could be evidence that even at this age boys are beginning to formulate differentiated roles in accordance with the differentiated positions they must look forward to occupying, whereas for the little girl who sees her future in terms of her mother's life, distinctions on the basis of mental abilities would be irrelevant.

Lehman and Witty studied vocational attitudes of 26,878 boys and girls from 8.5 to 18.5 years old. They found that girls tended to prefer occupations described as sedentary, aesthetic, involving personal service, teaching, whereas boys showed more preference for occupations involving travel, movement, physical activity, giving orders. They also noted that vocational attitudes of boys change more with age than do those of girls.

Strong found the following correlations of interests:

Between boys and girls, aged 16.	+.61
Between college men and college women	+.74
Between adult men and women	+.71

Lee reported relationships between the Terman-Miles Masculinity-Femininity Test and both the Bennett Mechanical Test and the Minnesota Clerical Test. Men as a group perform significantly better than women do on the Bennett, and women are significantly better than men are on the Clerical Test. For a mixed-sex group the correlation between the Bennett Mechanical and the Terman-Miles M-F is +.57. This is higher than most of the validity coefficients for the Bennett, that is, there is a closer relationship between scores on the Bennett Mechanical Test and the Terman-Miles M-F test than there is between the Bennett and most of the criteria against which it has been validated.

Correlations between occupational interests and Masculinity-Femininity on the Strong scales are shown in Tables 7.4 and 7.5. These correlations are based on the records of 285 Stanford seniors for the men's scales and on 500 women for the women's scales.

TABLE 7.4. CORRELATION OF OCCUPATIONAL INTERESTS WITH MASCULINITY-FEMININITY, 285 MALE SENIORS (STRONG, 1943)

Occupation	Correlation	Occupation	Correlation
Artist	−.44	Minister	−.56
Psychologist	−.14	Social science teacher	−.40
Architect	−.11		
Physician	−.06	Musician	−.41
Dentist	+.14		
		CPA	−.29
Mathematician	+ 11		
Physicist	+.32	Purchasing agent	+.46
Engineer	+.64	Office worker	+.16
Chemist	+.44	Accountant	+ 32
		Banker	−.01
Production manager	+.79		
		Real estate salesman	−.28
Aviator	+.76	Life insurance salesman	−.49
Farmer	+.68	Sales manager	− 31
Carpenter	+.63		
		Lawyer	−.62
Mathematics-physical science teacher	+.49	Author-journalist	−.66
Printer	+.57	Advertising man	−.74
Forest service	+.59		
		President, manufacturing concern	+ 03
YMCA secretary	−.34		
YMCA physical director	−.03		
Personnel manager	−.06		
City school superintendent	−.51		

TABLE 7.5. CORRELATION OF OCCUPATIONAL INTERESTS WITH MASCULINITY-FEMININITY, 500 MARRIED WOMEN (STRONG, 1943)

Occupation	Correlation	Occupation	Correlation
Physician	+.29	Life insurance sales	+.15
Dentist	+.29	Social science teacher	−.29
		YWCA secretary	−.29
		Social worker	−.20
Mathematics-physical science teacher	+.27	Lawyer	+.07
Physical education teacher	−.07	English teacher	−.47
Nurse	−.17	Librarian	+.09
		Artist	+.07
Housewife	−.03	Author	−.07
Office worker	+.02		
Stenographer-secretary	−.18		
Elementary teacher	−.37		

Shortly after interest scales were developed it became apparent that different forms were needed for men and women, and it was found that developing differentiations was more difficult for women than for men. On factor analyses, four factors were found in the women's scales by Crissy and Daniel. Three of these are like three of the factors found in the men's scales (see Table 7.3), interest in people, in language, and in science, but the fourth has no counterpart in the men's scales. They called this factor interest in male association. What seems to be the same factor has appeared in other analyses by other investigators who have given it various names: interest in order, interest in detail, non-professional interests. It is a troublesome one for occupational differentiation because it seems to be present in a great many women and to such a degree that it outweighs more definitive vocational interests. It may represent the attitudes and outlook of women who have no career interests as such, but look only to a home life. Tyler's further studies may show whether interest D in her first-graders is essentially the same thing.

Table 7.6 compares the vocations in men and women that are characteristic of the factors obtained by Crissy and Daniel for women and by Thurstone for men, on the Strong Test. The percentages in the table are the amounts of total communality accounted for by each factor.

TABLE 7.6. VOCATIONS CHARACTERISTIC OF THE FACTORS OBTAINED ON ANALYSIS OF SCORES ON STRONG FOR MEN AND WOMEN (FROM CRISSY AND DANIEL)

For Women

	Male Association	People, 25%	Language, 21%	Science, 16%
Positive loadings	Housewife General office Nurse	Lawyer YWCA secretary Social science teacher	English teacher Teacher, general Librarian	Physician Dentist Mathematical-physical science teacher
Negative loadings	Author Librarian Artist	Artist Dentist Author	General office Secretary-stenographer Life insurance sales	Secretary-stenographer English teacher Author Life insurance sales

For Men

	Business, 13%	People, 17%	Language, 29%	Science, 41%
Positive loadings	Real estate CPA Life insurance sales	Ministry Teaching YMCA secretary	Advertising Artist Lawyer	Chemist Engineering Psychologist
Negative loadings	YMCA secretary Artist Ministry	Journalism Medicine Advertising	Engineering Agriculture Purchasing Agent	Advertising Life insurance sales Real estate

Darley's analysis of the Strong brought out the following factors for women:

1. Technical.
2. Verbal or linguistic.
3. Business contact.
4. Welfare or uplift.
5. Non-professional interests.

As reference to Table 7.3 will show, the first four also appeared in his analysis of the men's scales; the fifth seems to correspond with that found by Crissy and Daniel.

Studies by Manson, and by Hogg, with independently developed occupational scales also did not differentiate among women as well as other scales differentiate among men. It seems very probable that generally women select their occupations more casually than men do, since for so many of them the occupation is not of primary importance. Hence it would be expected that women in different occupations, particularly in non-professional ones, would be less differentiable on the basis of their interests or aptitudes than men would be.

Age and interests

Several studies have shown that interests do change with age. Differences at different ages above the teens, however, are less significant than sex differences, than differences among occupational groups, or than differences between unskilled and professional groups.

Table 7.7 shows the major changes in interests as measured by Strong's Blank for Men, from age 15 to 25, and from 25 to 55. The

TABLE 7.7. MAJOR CHANGES IN INTERESTS FROM 15 TO 25 YEARS AND FROM 25 TO 55 YEARS IN PERCENTAGE OF LIKES (FROM STRONG, 1943)

Classification of Interests	*N* Items	Rank	Change, 15–25	Rank	Change, 25–55
People, desirable traits	13	1	+16.0	20	−1.8
Amusements, general cultural	13	2	+15.3	18	+2.0
Occupations involving writing	9	3	+15.1	2	−10.2
School subjects	36	4	+14.4	9	−3.8
Linguistic, primarily writing	23	5	+14.3	5	−6.9
Possession of present abilities	25	6	+14.0	7	+4.1
Physical skill and daring	19	22.5	−2.5	1	−17.0
Occupations involving physical danger, outdoors, mechanical pursuits, athletics, and travel	21	22.5	+2.5	3.5	−7.0
Dislike of change	21	20	−4.6	3 5	+7.0
Influencing others	19	7	+13.6	6	−4.9

six items showing the largest differences were selected from each comparison, out of 25 classes of items. Only two of the particular items showing major changes from 15 to 25 also show major changes from 25 to 55, and these are in the reverse direction, that is 55 is more like 15 than it is like 25. It should be noted that the greatest difference between 15 and 25 is in the increase in the total number of likes; this increase is found in all but three categories of items. Between 25 and 55, on the other hand, there is more often a small decrease than an increase. Rank order correlations between 31 classes of interests are as follows:

Between Ages	Rho
15 and 25	+.907
25 and 55	+.885
15 and 25	+.812

It is evident, then, that interests change moderately but fairly rapidly between 15 and 25, and very little after that. There has not been a comprehensive study in changes of interest with age in women.

Sollenberger's study of relations between urinary excretion of male hormone and interest maturity indicated that these correlations were higher than correlations between interest maturity and chronological age.

Permanence of interests

We have seen that the group pattern of interests changes relatively little at different age groups. How much change there is within individuals over varying periods of time is another question. Again most of our data are from studies with the Strong. Correlations between two sets of scores for the same person on a single scale, obtained from different groups and at different time intervals, are shown in Table 7.8.

Table 7.8. Permanence of Interests, Correlations for Repeated Tests (Strong, 1943)

	Correlation Coefficients			
Interval	11-Year-Old Boys	High School Boys	College Freshmen	College Seniors
1 week			+.90	
1 year	+.62	+.69	+.80	
2 years	+.51	+.57		
3 years	+.31		+.68	
4 years	+.31			
5 years				+.75
6 years		+.52		
9 years			+.56	
10 years				+.71

The closeness of the relationship decreases with increase in the interval between tests and increases with the age of the subjects tested.

Data on permanence of interests of individuals, in terms of agreement on the whole profile of 20 to 34 occupational scores, are shown in Table 7.9.

TABLE 7.9. PERMANENCE OF OCCUPATIONAL INTEREST PROFILES (FROM STRONG, 1943)

N	School Grade	Interval between Tests	*N* Occupational Scales	Correlations Range	Correlations Average
33	11th	3 weeks	20	−.32 to +.99	+.86
148	11th	9 21 months	20	−.68 to +.99	+.83
57	11th	21-35 months	20	−.07 to +.99	+.81
25	13th	1 year	34	+.60 to +.98	+.84
50	16th	10 years	34	+.25 to +.96	+.75

Several studies have shown that vocational interests do not appear to be affected by experience in the specified vocation or in other vocations. Professional students with little experience score approximately the same as do men with many years of experience. We do not, however, know how interest scores may be affected by *early* life experiences. It seems quite possible that one clue to differentiation of interests will be found here.

Intelligence and interests

A number of studies on the relationship between intelligence and interests have shown correlations ranging from about —.40 to +.40. The relation is affected by sex, age, amount of education, occupation, the type of intelligence test, and the type of interest. In general the higher positive correlations occur between scientific and linguistic interests and intelligence. Negative correlations are generally found between intelligence and social welfare, business contact, and business detail interests. Correlations between intelligence and interests for 285 Stanford seniors on the Strong Blank are given in Table 7.10 on page 94.

Aptitudes and interests

The few studies of relations between special aptitudes and interests have had generally negative results. Adkins and Kuder studied relationships between the Kuder Preference Record and the Thurstone Primary Mental Abilities Tests, finding only one correlation above .30. This was between number ability and computational interest in women; a similar relationship was not found for men. They con-

TABLE 7.10. CORRELATION OF OCCUPATIONAL INTERESTS WITH INTELLIGENCE, 285 COLLEGE MEN (STRONG, 1943)

Occupation	Correlation	Occupation	Correlation
Artist	+.18	Minister	+.02
Psychologist	+.38	Social science teacher	−.21
Architect	+.23		
Physician	+.24	Musician	+.02
Dentist	+.07		
Mathematician	+.35	CPA	+.22
Physicist	+.34	Purchasing agent	−.21
Engineer	+.28	Office worker	−.25
Chemist	+.35	Accountant	−.10
Production manager	+.04	Banker	−.33
		Real estate salesman	−.22
Farmer	+.06	Life insurance salesman	−.26
Carpenter	−.02	Sales manager	−.23
Mathematics-physical science teacher	+.08	Lawyer	+.13
Printer	−.13	Author-journalist	+ 18
Forest service	−.03	Advertising man	+.01
YMCA secretary	−.18	President, manufacturing concern	−.03
YMCA physical director	−.18		
Personnel manager	−.02		
City school superintendent	−.06		

cluded that preference scores should not be interpreted as indicating the presence or absence of special abilities.

Darley (1941*b*) found correlations ranging from +.04 to +.31 between six of the Strong scales and the Primary Mental Abilities Tests.

Gustad studied the relationship between vocational interests and Q-L Scores on the American College Entrance Examination (ACE) with 217 male college juniors as subjects. They were divided into three groups on the basis of their scores on the ACE: the dominantly quantitative (Q score higher than L); the dominantly linguistic (L score higher than Q); and those with approximately equivalent scores. The primary patterns of these groups were then compared on the Strong, but no consistent pattern differences were found.

Presumably such special aptitudes as musical and artistic ability might show closer relationships with appropriate interest scales, but these have not been investigated.

Interests and vocational choice

Interest tests have been constructed by analyzing the differences in responses given by people with different occupations. But, if a student's test score resembles that of men in a given occupation, will he be likely to choose that occupation spontaneously? Strong (1951) has reported 86 per cent agreement between interest scores taken of 345 men while they were in college and the occupations they were engaged in 20 years later. He noted, too, that those who changed their occupations did not have as high mean scores, either before or after the change, as those who did not change.

There has also been an investigation of the relation between interest patterns and occupational satisfaction. Sarbin and Anderson studied 76 men and 24 women, over 25 years old, who had been subjects at the University of Minnesota Testing Bureau. Although this group had not been to college they were of higher educational and occupational status than the average. In general, those in the group who were dissatisfied with their occupations had interest patterns which were not in accord with their occupations.

Interests and personality: personality inventories

There have been a number of studies based on personality inventories, most often the MMPI, although the Bell, the Thurstone Personality Schedule, and the Minnesota Personality Scale have also been used.

Berdie (1943) studied relationships between number of likes and dislikes checked on the Strong; the ACE; scores for morale, social adjustment, and emotionality from the MMPI; and grade standings. He concluded that the extent of likes or dislikes is closely related to the vocational interests. He found that people in occupations primarily involving personal relationships are characteristically acceptant, emotionally, of their surroundings, but that people whose occupations are more concerned with the "realities" of life tend to show rejection of their surroundings and perhaps cynical disillusionment. People in the rather dull, mundane occupations are generally indifferent to their surroundings.

There are two studies of relations between the MMPI and the Kuder. Triggs applied both tests to 60 women and 35 men. For the women, the only significant relationship was between MMPI lie score and musical and social service interests on the Kuder. For men, however, she found the following significant correlations:

Depression and social service	−.34
Depression and clerical	+.36
Psychopathic deviation and mechanical	−.41
Femininity and mechanical	−.37
Paranoia and computational	−.42

Paranoia and scientific	—.38
Psychasthenia and scientific	+.33
Psychasthenia and musical	+.33
Psychastenia and clerical	+.33
Schizoid trends and musical	+.39
Schizoid trends and clerical	+.32

Feather obtained MMPI and Kuder scores from 503 University of Michigan students (80 per cent male). He divided them into adjusted and maladjusted groups: a subject was classed as maladjusted if he had an F-score over 69 on any diagnostic scale. He also divided them into two groups on the Kuder, separating them at the 74 percentile. The significant differences between the normal and maladjusted groups by these criteria are given below. Entries marked with an asterisk were significant at the 1 per cent level, others at the 5 per cent level. There were no significant differences in social service interests.

Normal Higher on:	Maladjusted Higher on:
Mechanical*	Literary*
Scientific*	Musical*
Mechanical-scientific*	Art
Mechanical-persuasive	Art and literary*
Mechanical and musical	Literary and musical*
	Art and musical
	Literary and clerical

On the other hand, Cottle, studying 400 male adult veterans, using Strong, Kuder, MMPI, and Bell, found very little relationship between the personality and interest inventories, although the personality inventories were related and the interest inventories were related. Perhaps some of the discrepancies are due to differences in the samples in the different studies. However, Darley and Alteneder in separate studies, with the Bell and the Strong, like Cottle found no significant relationships between the two for men. Alteneder did find some higher correlations for women:

Social adjustment and lawyer	+.39
Social adjustment and social worker	+.38
Emotional adjustment and teacher	+.34
Home adjustment and teacher	+.26

L. E. Tyler (1945), studying the relationships between scores on the Strong and other tests with college sophomores, found a few significant correlations with the Minnesota Personality Scale. The Social key correlated significantly with Strong's Groups as follows:

Group I	−.32
Group II	−.35
Group V	+.25
Group IX	+.40

She believes that the principal element in the social key is a desire to know many people, and that it indicates preference rather than adjustment. She notes, too, that students with a tendency to avoid people were also more likely to have technical interests.

Darley also found relationships between the Social Adjustment section of the Minnesota Personality Scale and the Strong Test, reporting the following correlation ratios with particular Strong keys to be significant:

Chemist	+.16
Carpenter	+.25
YMCA secretary	+.30
Life insurance sales	+.41
Lawyer	+.16

Interests and personality: the Allport-Vernon Study of Values

The Allport-Vernon Study of Values (A-V) is designed to study attitudes in six categories: aesthetic, religious, economic, political, social, and theoretical. There are marked sex differences. There have been a number of studies investigating relationships between scores on this test and scores on the Strong or the Kuder, or choice of vocation, or major college course. These are summarized in Table 7.11 on pages 98 and 99. The data have usually been reported in terms of correlations. Although in different studies the correlations are usually low (only significant ones are recorded in the table), is is clear that agreement among the studies is so marked as to make it quite certain that relationships do exist.

Interests and personality: personality integration

Helper and McQuitty studied personality integration and the Strong scales for 34 occupations, and found that persons who expressed interest patterns characteristic of relatively few occupational groups obtained integration scores indicating a significantly higher average degree of integration than was obtained by subjects expressing interest patterns characteristic of a relatively large number of occupational groups.

In summary, we do not have occupational data based upon an adequate theory of the nature and development of personality, but we

TABLE 7.11. SIGNIFICANT RELATIONS BETWEEN ALLPORT-VERNON STUDY OF VALUES AND OCCUPATIONAL CHOICE, MAJOR SUBJECT OR TEST SCORES, FROM VARIOUS STUDIES

A-V Values	Stone Occupational Choice, 279 male sophomores	Arsenian Cleeton V-I Inventory, 333 male freshmen	Duffy and Crissy Strong, 108 female freshmen	Burgemeister[a] Strong, 164 college women		Sarbin and Berdie Strong, 52 college students	Seashore College major, 711 male college students
Asthetic +	Teacher Literary	Creative or public performance occupations	Artist Librarian Author	Author Librarian	English teacher Artist	Group I	
Aesthetic −	Business	All others	Nurse Lawyer Office worker	Lawyer Mathematics-physical science teacher Stenographer	Nurse Office worker Housewife		Social science Health, physical education
Religious +	Teacher Literary	Social welfare				Group V	Social science Health, physical education
Religious −	Banker		Lawyer				
Economic +	Business	Business administration Finance occupations Specialty sales Skilled mechanic	Lawyer Office worker	Life insurance sales Stenographer Office worker		Group I	
Economic −	Doctor Teacher Literary	Creative or public performance occupations	Artist Author	Author Librarian Artist	Physician Dentist Social worker		Social science Health, physical education
Political +	Lawyer	Creative or public performance occupations Biological sciences	Lawyer Office worker Stenographer	Stenographer Housewife Life insurance sales	Office worker	Group I	Health, physical education

A-V Values	Stone Occupational Choice, 279 males sophomores	Arsenian Cleeton V-I Inventory, 333 male freshmen	Duffy and Crissy Strong, 108 female freshmen	Burgemeister[a] Strong, 164 college women		Sarbin and Berdie Strong, 52 college students	Seashore College major, 711 male college students
Political –	Doctor Literary	Social welfare		Author Artist Dentist Librarian Physician	Social worker English teacher Mathematics-physical science teacher YWCA secretary	Group II	Social science
Social +		Creative or public performance occupations Social welfare Legal and literary	Nurse	Social worker Social science teacher YWCA secretary	Housewife Nurse Office worker		Health, physical education Social science
Social –			Artist Librarian Author	Artist Librarian Author			
Theoretical +	Doctor	Physical, biological sciences Skilled mechanic Finance occupations	Physician	Librarian Physician Mathematics-physical science teacher Dentist	Artist	Group I Group II	
Theoretical –	Business Lawyer		Housewife Office worker Stenographer	English teacher Stenographer	Office worker Housewife	Group IX	

[a] Critical ratio of 2 or more for difference in A-V score between those scoring high and those scoring low on indicated Strong scale.

do have strong indications that occupational preferences are closely related to different aspects of personality. The relationship has so far been most thoroughly studied in terms of interests. These are more important as determiners of the kinds of occupations that an individual will enjoy and be successful at than are intellectual factors. In addition, attitude and masculinity-femininity scales have shown such relationships. A beginning has been made with clinical studies, and these offer many promising leads for a better understanding of these relationships.

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CHAPTER 8

Differences in Social Inheritance

Our social inheritance is not limited to such conditions as family position and wealth; it includes also the general situation of the community, the country, and the part of the world in which we are living. We do not often think of these things as having a direct bearing upon the ways in which we can make a living or spend our spare time, but they do. It is only necessary to consider the enormous differences in our own country in times of prosperity, of war, and of depression, to see how great this effect is. Not all members of the community are equally affected by such major changes, but none remain unaffected.

Some idea of the enormous range of possible differences was given in Part I, when we discussed occupations in various societies. There are also very great differences between societies which are at approximately the same level of civilization and which have many cultural traits in common. It is more difficult to make a living as an artist or a composer in America than in France, even now. There are fewer artists in societies which do not value artistic productions, and fewer philosophers in societies which are more intent upon material progress.

The total cultural milieu may enormously limit the avenues of expression open to its members. This may be fairly direct, by failure to support the occupation or even by social ostracism of those who follow it. It may be indirect in the sense that cultural elements not valued by the society may never become known to the members of it. With increasing literacy, all members of the group can be aware of occupations pursued only in other communities, but it is not enough to know that there have been at some time and place in the world exemplars of other ways of life. It must also be known or perceived as a possibility for an individual in his own society. This is of the greatest importance. For example, most boys and girls in our country have read of great scientists and artists. For the most part, however, these remain remote, almost mythical figures, with no personal relevance for the average boy, and it may never occur to him that perhaps he, too, could become a scientist or an artist. Perhaps not all of them could, in fact, but many more have the possibility than ever realize it.

One of the most important general cultural factors is the degree of conformity required by the society, either in terms of the rigidity with which particular patterns of behavior must be adhered to, or in terms of the number of different stereotypes which are acceptable, or both. For example, the freedom of women to work varies greatly from one country to another, and so do the penalties inflicted on them for working. In no country, with the possible exception of the Soviets about which our information is incomplete, is every occupation open to a man equally open to a woman with the pertinent qualifications. In our own society we are witnessing constant and increasing changes. To work because of economic necessity is almost everywhere considered respectable for a woman, if unfortunate, but there are many communities still where women who work because they want to and not because they have to are subject to some social or other penalties. This applies particularly to women who want to marry *and* work. Until very recently many states would not hire married women as teachers, and women who married while teaching were promptly discharged. In Australia, even now, in the state Civil Services, when a woman marries she is automatically demoted one step, and her pay is cut even though she may continue doing the same work as before.

Another simple and very important aspect of the general cultural situation is the ease with which an education can be obtained. If boys and girls cannot go beyond high school, except under most unusual circumstances, they cannot make a free choice of occupations because there are many occupations which require a higher education. It is still not literally true that anyone who wishes to can get a college education in this country, but it is more nearly true than it used to be. Then, too, there is the matter of "wishing to" get a college education. Whether or not this is important to any one may be more a reflection of his social background than of his capacity to make use of such an education, or of his enjoyment of it. If no one else among a group of high school cronies is thinking of going to college one isn't likely to think about it. The role of education in these respects, and of scholastic performance as it is related to occupational performance, will be discussed in the next chapter.

Expectation of college attendance varies with the social class position of the family (Warner, Havighurst, and Loeb). It also varies with father's occupation, as shown in Table 8.1. Note that after students get to college the percentage graduating is very similar in all groups except for those from farm homes. This may be because of the generally poorer preparation in rural schools.

TABLE 8.1. THE RELATION BETWEEN FATHER'S OCCUPATION AND PROBABILITY THAT A HIGH SCHOOL GRADUATE WILL ENTER COLLEGE AND THAT A COLLEGE ENTRANT WILL GRADUATE (WARNER, HAVIGHURST, AND LOEB)

Father's Occupation	Percentage of High School Graduates Who Enter College	Percentage of College Entrants Who Graduate from College	Percentage of High School Graduates Who Also Graduate from College
Professional and semi-professional	67	60	40
Managerial	50	55	28
White collar (clerical sales, service)	48	57	27
Farmer	24	44	11
Factory, craftsmen, unskilled, etc.	26	58	15

Havighurst suggests the following scheme for estimating the probability of college attendance (assuming equal propinquity of an educational institution and equal intelligence) in relation to individual motivation and to socioeconomic status:

	Individual Motivation		
Socioeconomic Status	Low	Medium	High
High (upper and upper middle)	Doubtful	High	Very high
Medium (lower middle)	Low	Doubtful	High
Low (working class)	Very low	Low	Doubtful

Wolfle has estimated that in 1940, of the population then over 25, 5.5 per cent would have had 1 to 3 years of college, and 4.6 per cent, 4 or more years. For 1960 he estimates these figures to be 8.9 per cent and 7.1 per cent.

Another important aspect of the conformity problem is seen in the requirements of ideational conformity, which are at present seriously hampering intellectual freedom in our country. Although these have not yet directly affected occupational choice in many instances, increasing attempts to control scientific research are beginning to be limiting and serious.

FAMILY, SOCIAL CLASS

There is no society of any degree of complexity in which the father's position does not in some way influence the child's socioeconomic position, and in this respect position includes occupation. The extent of the influence varies from society to society, and from one group to another within a society, as well as from one family to another. The amount and sort of education one wants or can get, as well as one's occupational choice, are very directly influenced. It is more likely than not that a child will remain in or near his father's general socioeconomic group. On the other hand, if he does leave his group, it will be most likely that he will do so through his own occupation, or through marriage into a different group.

Parent-child similarities in occupation

In a society which expects one son, often the eldest, to follow his father's profession, there is less personal choice than in a society in which there is greater occupational mobility between the generations. Such expectations vary from society to society, in different regions in one country, and from one time to another in the same country. It is, for example, less the rule now in our own country than it has been in the past. This is also true in so different a society as that of Japan, where a study of three classes of college students showed that, whereas in their grandfathers' time 71.4 to 77.8 per cent entered hereditary occupations, in 1931 only 59.5 to 39.3 per cent did so (Koyama).

Relationships between occupations of fathers and sons appear both in choices during college years and in actual selection of occupations. Nelson studied 3,211 students in 18 institutions, comparing their choice of occupation with their fathers' occupations, and found that the number who would be expected to select the fathers' occupation on the basis of chance greatly exceeded the actual number for agriculture and labor (reflecting in part census changes in these categories), but in all other occupations, and especially medicine, journalism, and teaching, the number choosing was more than would be expected by chance. He concludes that there is a small but positive and significant relationship. Wilson, who studied graduates of the University of Kentucky, found that three-fourths of the men whose parents were also graduates of that university entered different occupations than their parents had. It must be pointed out that such figures are affected by the specificity of occupational classification. If they are based on definite occupations, such as a lawyer, they will be lower than if they are based upon occupational groups, such as professional.

Kwoh investigated a sample of Chinese male college graduates which included about one-third of all those then in the United States. Compared with their own fathers and brothers, graduates were more often in professions, even though half were the sons of businessmen. Chinese college graduates enter business less frequently than non-Chinese college graduates do, and three-fourths work outside Chinese communities. Kwoh points out that their major business opportunities are in their own fathers' businesses, which are likely to be small old-fashioned places, and that professions carry higher prestige in Chinese communities as well as in the community generally.

College students, after all, comprise a limited group and are already selected on a social class basis to a considerable extent. Several other studies have been made which apply to broader groups.

Centers collected occupational data for about 650 men and their fathers, classifying them in terms of level on an occupational scale: large business, professional, small business, white collar, skilled manual work, semi-skilled work, unskilled work. Each man's occupation was recorded by the number of steps above or below his father's occupation that his own was placed. The results are shown in Table 8.2. For all strata the difference was +.35. He found that the over-all net mobility was small both in amount and extent, and that both amount and extent of mobility are greatest at the extremes of the occupational scale. His figures give 58 to 76 per cent of the sons' occupations at the fathers' level or one adjacent to it; Davidson and Anderson give 60 to 73 per cent for the same relationship.

TABLE 8.2. OCCUPATIONAL LEVELS OF FATHERS AND SONS (CENTERS)

Occupational Level of Father	Occupational Levels of Sons in Relation to Father's Level
Large business	−2.13
Profession	−2.07
Small business	−1.10
White collar	−0.38
Skilled manual	+1.08
Semi-skilled	+1.42
Unskilled	+3.77

Reynolds selected a sample of 450 manual workers to represent a cross section of the working population of a city. Eighty per cent of these were the children of manual workers. Table 8.3 shows the relation between their occupations (and those of their brothers and sisters), and the occupations of the fathers. He points out that these data have the following defects: (1) Some of the sibs are young and may advance to higher jobs. (2) The sample is not a complete cross section since it included only parents with at least one child in manual labor. (3) The occupational level of the father is taken as of the time the child entered work. The first and third defects are not very serious, since changes in occupational level among manual workers are not common.

TABLE 8.3. OCCUPATIONAL LEVEL OF WORKERS COMPARED TO OCCUPATIONAL LEVEL OF FATHER (REYNOLDS)

Occupational Level of Father	Occupational Level of Children (% of distribution) 1	2	3	4	5	6	7	8	9	Total
1. Proprietor, etc.	9	4	2	40	28	7	7	3	0	*100*
2. Professional, etc.	8	12	4	30	12	14	4	12	4	*100*
3. Foremen	13	3	0	43	32	6	3	0	0	*100*
4. Skilled	4	5	2	40	25	10	7	5	2	*100*
5. Semi-skilled	5	0	5	25	43	6	11	4	1	*100*
6. Unskilled	2	1	1	26	46	11	8	5	0	*100*
7. Clerical and sales	3	3	0	26	26	16	10	13	3	*100*
8. Service and domestic	3	3	0	19	32	17	14	12	0	*100*
9. Agriculture	4	4	2	24	28	18	1	5	14	*100*

Studies of the Occupational Level Scale* of the Strong by Barnett, Handelman, Stewart, and Super investigated family background. Their data suggest that, whereas the father's occupation may determine the vocational field, the mother's background (expressed in terms of her parents' occupations) is more clearly a determiner of the socioeconomic level of interest. Sons of skilled workmen whose mothers come from superior socioeconomic backgrounds tend to have interests characteristic of higher occupational levels; perhaps they acquire also from their mothers a more positive evaluation of post-high school education and of white collar jobs than is typical of boys whose mothers as well as fathers come from skilled or semi-skilled backgrounds. There is some rather unclear relationship between religious background and occupational level scores of sons of skilled workmen. Sons of Protestants and sons of mixed marriages both score higher than sons of Catholics, and the difference is significant in the latter case.

That there are regional differences in vertical mobility has been demonstrated for attorneys by Adams, who reported that those from the Northeast had their origin in families of lower occupational prestige more frequently than attorneys in the Midwest and even more frequently than attorneys in the Southwest.

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* This scale contrasts the interests of semi-skilled laborers with the interests of professional men. There have been a number of discrepant opinions as to what this scale really measures. The study by Barnett, Handelman, Stewart, and Super concludes that it is a measure of the socioeconomic level where the individual will be most comfortable.

Eminence and level of social origin

A number of studies have noted that eminent men do not come with proportionate frequency from all socioeconomic levels. To have been born in a lower socioeconomic group does not make it impossible to achieve eminence in any field, but it certainly makes it less probable. The effect may be an indication of the greater opportunities open to upper-class persons, as well as an indication of their more frequent high intelligence; it may also indicate differences in motivation resulting from training, but on this point we have no information.

The relationship holds in all fields of activity, letters, science, art, business. About half our eminent scientists have been the sons of professional men (Cattell and Brimhall; Roe, 1953; Visher). In 1932 Taussig and Joslyn reported that about 70 per cent of business leaders came from 10 per cent of the population. At that time over half the business leaders had fathers who were businessmen; they estimated that by mid-century the proportion would be two-thirds. Davis studied eminence and level of social origin of 803 native males listed in *Who's Who in the East* for 1942–1943. The results are reported below in terms of the number of cases in the sample per 100,000 of the base population, which was taken as the number of males in the occupational group in 1900.

Father's Occupation	Sample Cases per 100,000 Base Population (1900)
Professional	73.5
Business	38.0
Clerical	4.9
Labor	1.2
Agriculture	4.2

Similar relationships hold in other societies. Geiger has reported that the Danish intelligentsia are recruited more numerously from the professional classes, especially those in the languages, art, and music. The middle class, although in smaller proportions, has made a notable contribution to the more practical sciences and to the well-to-do in business, and the few members of the lower class who broke into the intelligentsia usually achieved enduring fame. The last point is of interest; presumably it is so much more difficult an achievement for a man from this social level that only very superior ones with great drive manage it.

Personality differences and social class

It has been demonstrated that there are personality differences associated with social class, and, since it is also apparent that both so-

L. [illegible] National Academy
of [illegible] A/c

cial class and personality are associated with occupational factors, one relationship may enhance the other. Auld has surveyed the available studies on differences in personality test responses associated with differences in socioeconomic background. Data on the following tests were available: Bernreuter, Brown, California Test of Personality, MMPI, Pintner Aspects of Personality Inventory, Pressey X-O, Rorschach, SRA Youth Inventory, TAT, Vineland, Wisconsin Scale of Personality Traits, and Woodworth-Matthews. He found that middle-class subjects always get more "favorable" scores than do lower-class subjects. In about a third of the studies reviewed, differences were appreciable; they were larger when social rather than economic measures of social status were applied, and when the subjects had a considerable spread in social status.

It should be borne in mind that these results mean only that, on standard personality *tests*, lower-class subjects receive less favorable scores; they do not necessarily mean that lower-class subjects have less desirable personalities. Tests have been developed for the most part by persons with middle-class backgrounds and mores; their standards are those of their own group. From the standpoint of the whole society these are not necessarily the best; in fact there seems no particular reason why it should be desirable for all members of a community to have similar personality structures. On the contrary a good argument could be advanced for the desirability of more variation.

This sort of bias can be very pervasive and difficult. Psychologists, for example (Roe, 1952), tend to get scores indicating better adjustment on the Group Rorschach. For a number of reasons it seems clear that this means only that the Rorschach is interpreted in terms of the sort of self-ideal held by psychologists, and this is not quite the same as that of, say, biologists and physicists. However, the fact that there are rather consistent differences in scores on tests need not mislead us too far if allowance is made for this difference, and if interpretations are not made in absolute value terms.

Remmers, Horton, and Lysgaard hypothesized that high school students would show differences associated with social class in:

1. Deferred gratification behavior patterns.
2. Level of aspiration.
3. Ideology.

They questioned a 2,500-pupil sample of 15,000 high school students, and the results supported the hypothesis. They point out that the middle-class pattern of deferred gratification, higher level of aspiration, and an ideology that is primarily one of business rather than labor-socio-political is the one generally emphasized by our schools. They consider this a hardship on working-attitude standards. It may be one reason why schools are on the whole less palatable to students from homes of lower socioeconomic level.

RELIGION

Religious affiliation may have some relation to occupational selection, but in the over-all social picture it is usually an indirect one, and most often incidental to other aspects. In any community the dominant or influential group is usually of the same religious affiliation, taken broadly (e.g., Protestant), and in some places even of a single sect (e.g., the Mormons). In such situations the members of other groups are likely to be at a disadvantage, either in the obtaining of jobs, or in advancement in a business or professional hierarchy (Dalton). In individual instances, of course, the disadvantage may be very direct. A proprietor may give preference to members of his own religious group, or may even refuse to hire those of certain other groups. Fair Employment Practices Acts forbid this, along with discrimination on the basis of race, but it clearly does occur.

Religious affiliation and eminence

There seem to be no data on occupational distribution by religious affiliation for the population at large. There are, however, several studies of the religious affiliations of eminent persons. Clear differences appear in these studies, but it is more probable that the basic association is with elements in the religion attractive to persons who become eminent in various fields rather than with external restrictions on occupational selection, except for Jews.

Fry classified about the first half of *Who's Who* entries in 1910–1911 into occupational and denominational church membership groups. Only 56 per cent had given a denominational affiliation; this is roughly the same as that recorded for the total population. Failure to give an affiliation did not necessarily mean that one was lacking. It can, however, be fairly interpreted as meaning at least that an affiliation was personally unimportant to the subject. He noted that, the more creative or mechanical the occupation, the less likely church membership was to be recorded, the figures running from 23 per cent to 64 per cent (except for religious workers). His calculations of the amount of denominational representation in *Who's Who* in proportion to general church membership in the country as a whole are shown in Table 8.4. He noted also that the Congregationalists and Unitarians are especially high among scientists and the Roman Catholics especially low. Davis gives similar results for an analysis of *Who's Who in the East* for 1942–1943. Her data, computed on a somewhat different basis, are also given in Table 8.4.

TABLE 8.4. RELIGIOUS AFFILIATIONS OF AMERICAN LEADERS (DATA OF FRY AND OF DAVIS)

	Denominational Representation, *Who's Who*, 1910–1911, in Proportion to Church Membership (Fry)	Sample Cases per 100,000 Male Church Members, *Who's Who in the East*, 1942-1943 (Davis)
Unitarian	32.5	20
Reformed	6.25	
Universalist	6.43	
Episcopalian	6.07	4
Congregational	4.96	4
Quaker	4.40	
Presbyterian	3.11	4
Christian Scientist	1.27	
Methodist	0.89	1
Baptist	0.70	1
Disciples of Christ	0.61	
Lutheran	0.32	
Roman Catholic	0.31	0.1

The finding that very few scientists, at least among the eminent, are Catholics has been noted by other workers also (Knapp and Goodrich). I have discussed the possible implications of this elsewhere (Roe, 1953). Note that the Protestant sects contributing the fewest scientists also discourage free inquiry among their members and exercise a tight control over them.

RACE

Differences in the occupational opportunities that are open to different racial groups in America are well known. Occupational distributions of Negroes in the working population are given in Chapter 10. Discrimination is slowly decreasing with generally changing attitudes, helped by such factors as Fair Employment Practices Acts. Ruchames, in a study of the results of the FEPC, points out that discrimination and prejudice cannot be eliminated by force alone, but that on the other hand education unaccompanied by at least the possibility of force is futile. Experience has indicated that once the barriers are lowered it is simple to continue, but this must always be on terms of complete equality.

In fact it has been shown in many studies that where the Negro is equally well trained he is no less effective than the white. Such studies as that of Bullock, reported below, demonstrate nicely the essential irrelevance of the fact of race to the realities of the working situation.

From a directory of Texas manufacturers, Bullock made a random selection of 989 enterprises and studied their attitudes towards the employment of Negroes. It should be noted that Texas is one of the states where racial barriers are drawn very sharply. His conclusions are:

> This study allows the conclusion that the job and quantity elements of the Negro employment policy of Texas manufacturing firms are more closely associated with the economic nature of the firms than they are with the racial attitudes held by their personnel managers. Whether or not Negroes are regularly employed by a firm appears to be in the main a function of the type of ownership [corporative firms employ more than non-corporative types; heavy manufacturing more than light or clean], of satisfactory experience with Negro workers, and of the size of the city in which the firm is located. The number of Negroes employed depends more upon the type of industry, type of ownership and size of service area [there are more Negroes in firms crossing state boundaries] than upon employer attitudes.
>
> It is in the quality test of opportunities for employment that racial attitudes show their greater influence. The type of industry appears more functional with regard to the occupational levels on which some Negroes are allowed to work, but the number allowed to work on these levels appears to be more closely related to attitudes than to the economic nature of the enterprise. Our findings imply a decreasing preference for Negro workers as the occupational level increases

Not only is the Negro quite capable of adequate performance at most kinds of work, but it has been the general experience that opposition to Negro coworkers decreases with contact with them. Both Army and industrial studies have shown that attitudes towards integration of Negroes into previously all-white groups vary with the actual experience of members of the groups in working with Negroes. Army studies showed that integration of white and colored troops was most favored by white soldiers who had been in closest contact with Negro troops and least by those with no such experience. (Stouffer et al.)

A similar study in industry shows that whites who have Negro coworkers are markedly more favorable to working with Negroes, or even under them, than are whites who have not worked with Negroes previously. Some data are given in Table 8.5.

TABLE 8.5. ACCEPTANCE OF NEGROES AS COWORKERS (OPINION RESEARCH CORPORATION)

	Percentage Responding "Yes"	
	Whites Who Have Negro Coworkers	Whites Who Do Not Have Negro Coworkers
All right to work next to a Negro	84	59
All right for company to hire Negroes for my type of work	79	59
All right to work under a Negro supervisor	54	37
Agree that companies should train Negroes to fill higher skilled jobs	56	43
Agree that companies should open up white collar jobs to Negroes	63	50

We have noted that where the Negro is equally well trained he is no less effective than the white. The problem of obtaining training, however, is very much more difficult for the Negro than it is for the white. This applies to vocational as well as to general education. It will be some time before the desegregation ruling of the Supreme Court can bring about any genuine change in these areas. Even in communities where segregation has not been the rule fewer Negroes have been able to take advantage of the available education, or have wanted to. Economic pressures have ordinarily been heavier upon them, and it has not always been true that additional education opened up better jobs to them, although this has been generally so.

Loop made a study of 6,799 Negroes living in Manhattan and found that, although advanced education was necessarily of value in securing professional positions, and there was an inverse relation between the amount of scholastic training and employment in domestic jobs, there was no appreciable effect of education in industrial, semi-professional, or professional service-attendant fields. He pointed out that the slower vocational progress of the Negro is hampered by many factors other than education, including frequent exclusion from unions.

Limited as are the general opportunities, individual Negroes have entered a very large number of fields. Johnson, studying 5,512 Negro college and professional graduates, found 204 different male and 104 different female occupations represented. But there is a heavy concentration in a few occupations: education 40 per cent; medicine 12 per cent; dentistry 8 per cent; law 4 per cent; and the ministry 3 per cent.

Race and eminence

There are, naturally, relatively as well as absolutely fewer members of racial minority groups who achieve any degree of eminence. Such persons not only must overcome many more obstacles in achieving greatly; they also meet another obstacle in obtaining equal recognition for equal achievement. Smith, in study of racial origins of eminent persons in this country, found that Indians had about one-tenth as many chances for eminence as the population in general, but that even so they had almost three times as many chances as do Negroes. In a later study, with Moton, he noted that the Jewish contribution among prominent Americans is not as high as that of the population in general, in spite of their generally high capacities.

It is clear that social pressures of various sorts are an extremely important factor in determining occupational possibilities.

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CHAPTER 9

Differences in Education and Other Biographical Factors

In this chapter we shall be concerned with the relationship between life occurrences and occupational choice and progress. Among the most important of these biographical factors are differences in education. Other factors include experiences in the family while growing up. It is probable that such experiences are major factors in the development of interests and in the choice of a career, but there is very little direct evidence as yet available.

EDUCATION

Amount of education

The total amount of education received is obviously a factor of considerable importance, although other aspects of education are also related to occupations. The correspondence between amount of education and occupational level is not perfect. Professional occupations for the most part have quite exact educational and training requirements, and without meeting these at least minimally it is now almost impossible to enter any of these fields. Business requirements are much less definite: for the most part, however, a high school education is a prerequisite. How helpful a college education may be in business varies with the individual situation. As college education becomes more customary it will become more and more expected, even though it may have relatively little importance for the job itself. Even lower-level white collar jobs generally require a high school education, or at the very least several years beyond grade school. Jobs in the skilled and lower manual categories often do not require education beyond grade school. Nevertheless, with larger percentages of the population going through high school, more and more high school graduates are going into manual jobs, for which their high school training has not only not been much help, but may even prove to have been a hindrance. This is because the average high school is oriented towards the white collar or professional occupations as ideals; to turn to manual work may then be frustrating, even though it is actually better suited to the individual.

Wolfle has reported changes in the level of education of the population, and his data are shown in Table 9.1. Educational level is seen to be steadily increasing. (See also Table 9.4.)

TABLE 9.1. PERCENTAGES OF POPULATION OVER 25 YEARS OF AGE AT VARIOUS EDUCATIONAL LEVELS (DATA FROM WOLFLE)

	1940	1950	1960 (estimated)
0–8 grades only	60.4	50.2	40.0
9–12 years	29.5	36.9	44.0
1–3 years college	5.5	7.1	8.9
4 or more years college	4.6	5.8	7.1

Number of years of education is only a crude measurement of the actual acquisition of knowledge. This was so even when advancement in school from year to year meant that at least a minimum of learning had been accomplished. Now that many school systems have adopted the practice of promoting students yearly no matter what their accomplishment, the amount of education is coming to have little more significance than chronological age. (Allen and Krone.)

The situation is not greatly different in the colleges. A number of colleges, particularly state-supported ones, have adopted the position that any citizen who wants it is entitled to a college education. Since there are a number of persons in the community without the intellectual resources to profit by the usual college curriculum they have introduced courses which these students can pass: waiting tables is an extreme example. Even apart from this there are great differences in the level of mental ability of students in various colleges. In 1938, of 355 colleges using an intelligence test for freshmen students, the college averages ranged from IQ 122 to IQ 94, with an over-all average of 108. In the lowest ranking college, one-fourth of the freshmen had IQ's under 90 and fewer than one-fourth had IQ's of 100 or more (Super). Data on AGCT scores of all freshmen admitted to 41 different colleges in 1946 are shown in Fig. 9.1.

An undergraduate college major does not have any necessary relation to the vocational field the student will enter. An undergraduate major is not sufficient for any professional work above the technological level. Those who go on to post-graduate studies, however, are very likely to work in the field of their post-graduate majors. The correspondence is almost perfect for physicians and dentists; it is high for engineers and lawyers but lower for businessmen. Post-graduate business education is not common, nor are there any occupations requiring it as there are for post-graduate professional education. The estimated occupational distribution of college graduates by major fields, on July 1, 1953, is shown in Table 9.2, page 120. (Wolfle, 1954.)

There are, in fact, quite a number of occupations that have no educational requirements, although the personnel managers may prefer to hire workers who are literate to at least some degree. Edgerton and Blum have pointed out that statements of educational requirements, particularly for lower-level jobs, have been too general and ordinarily are unrelated to the actual job duties. Some jobs require no knowledge of reading, writing, or arithmetic; some require only the reading of numbers or letters, or of words on controls or switches, and so on. A surprising variety of jobs have low literacy requirements. This is shown in the study by Altus and Mahler. They analyzed the types of occupations pursued by draftees classed as "illiterate" by the Army and sent to literacy school for 12 weeks of training. Table 9.3, page 121, gives the 16 most frequent of these occupations, accounting for 81 per cent of all trainees studied. The main occupation for each man (followed for at least 1 year) is listed.

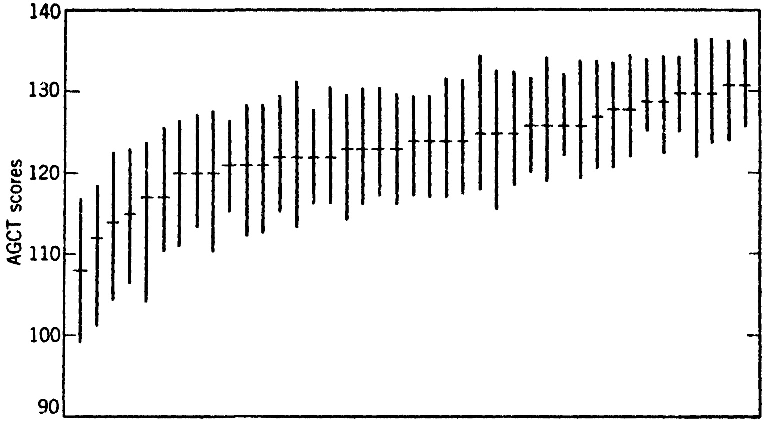

Fig. 9.1. AGCT scores of all freshmen admitted to 41 different colleges in 1946. Each bar represents a different college. The horizontal line shows the median AGCT score of all freshmen admitted in 1946. The upper and lower ends indicate the 75th and 25th percentile scores. (From Wolfle.)

That the amount of education may be related to unemployment during periods of stress, such as a general depression, has been shown by DeVinney. He studied the situation in Chicago in 1934, and his sample included 100,000 males and 30,000 females. Within the same socioeconomic levels and age groups there was a significant negative

TABLE 9.2. ESTIMATED OCCUPATIONAL DISTRIBUTION OF COLLEGE GRADUATES IN THE UNITED STATES AS OF JULY 1, 1953, CLASSIFIED BY MAJOR FIELD OF UNDERGRADUATE STUDY (AFTER WOLFLE, 1954)

Field of B.A. or First Professional Degree	Percentage of Graduates in: Same Field		Other Professional Field		Teaching		Business		Administration, Not Business, Not Education		Non-professional Work		Full-Time Education		Not in Civilian Labor Force	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Natural sciences	22	16	33	8	7	12	7	5	6	5	6	2	11	5	6	49
Psychology	15	6	20	2	[a]	[a]	20	13	12	1	4	11	16	3	11	63
Social science	5	3	18	11	12	10	21	3	10	7	15	15	10	4	6	46
Humanities, arts	22	10	14	4	19	15	12	2	2	3	14	12	8	3	10	51
Engineering	64		3		[a]		10		5		10		2		4	
Agriculture	48		6		2		9		7		20		2		6	
Home economics		16		[a]		4		2		6		3		[a]		67
Health fields	90		1		[a]		2		1		2		2		3	
Business, commerce	51	14	5	[a]	[a]	7	(51)[b]	(14)[b]	4	3	26	19	3	1	10	57
Education	36	36	17	4	(36)[b]	(36)[b]	13	1	7	4	17	5	5	5	5	44
Law	74		1		1		14		1		5		[a]		3	
Social work		24		1		[a]		5		5		16		4		44
Other professions[b]	49	31	7	6	1	2	14	[a]	6	8	11	2	2	1	10	52

[a] Less than 0.5%.

[b] Including architecture, journalism, library science.

TABLE 9.3. CLASSIFICATION OF ILLITERATES BY OCCUPATION (FROM ALTUS AND MAHLER)

Occupation	Percentage Whites	 Negroes	 Both
Farm hand	60.8	32.9	52.6
Truck driver	13.1	19.5	15.1
Laborer, general	6.0	12.4	7.9
Laborer, construction	3.4	5.6	4.0
Cook	1.3	5.4	2.5
Mechanic's helper	2.0	3.7	2.5
Tractor driver	2.4	0.8	1.9
Sawmill worker	1.0	3.7	1.8
Porter	0.0	5.6	1.6
Section hand, railroad	1.4	3.0	1.6
Service station attendant	0.8	3.4	1.6
Painter	1.3	1.9	1.4
Welder	1.4	1.2	1.4
Lumberjack	1.4	0.3	1.0
Carpenter	1.1	0.7	1.0
Total number	1,409	589	1,998

relationship between schooling and unemployment. It was not clear whether this relationship held for all educational levels, but it did hold for every age group and every occupational level.

In a study of 3,918 clients at a relief organization, Sweltzer and Adams reported that they found no relation between amount of education and job merit ranking. Their subjects had education ranging from 1 year of high school to 4 years of professional training.

The relationship between employment and education may be somewhat complex with disadvantaged groups. For example, Metcalfe investigated Negro applicants at a vocational adjustment bureau. He found that those with considerable schooling had had more jobs and more varied jobs than those with less schooling, but that more of those without vocational training had already held jobs than those with such training. This may be attributed to the fact that most of those without training had taken domestic jobs, and the girls who had had vocational training were reluctant to accept this work.

Scholastic achievement

There is a relation between scholastic achievement and vocational choice but only of a very general sort. On the whole, those with higher grades tend to wind up in occupations of higher levels. Gist, Pihlblad, and Gregory found a fairly consistent correspondence between average scholastic achievement and subsequent occupation, the professional groups showing higher academic records; yet there was marked overlapping of grades between occupational groups.

Particular experiences may be crucial for occupational choice. The discovery of the possibility of finding things out for oneself, of personal involvement in research, has been a major factor in turning many men to science.

Various workers have investigated the relationship between scholastic achievement and success. Success may be defined in various ways. One easy way is to view income as a measure of success. There are many reasons why this is not ideal, but within one occupational group and age level it is not too unsatisfactory, provided that the range of other economic factors is controlled. For example, one cannot reasonably compare success, in terms of income, of teachers who are in a large city school system and those who are in a poverty-stricken small southern town. Another technique for determining success is to use ratings from superiors, or from others who know the subject's work. This also has difficulties. One cannot get a very large group of subjects, if they must all be known equally well by several raters, so that it usually results in having to compare ratings of different raters as well as of different subjects. This introduces complications, especially as it seldom happens that all the raters have been well-trained and that a preliminary study to see how well they agree has been made.

Several studies report a positive relation between success in school and "success in life." (Diaz-Gasca, Krehl.) Another worker reports a large degree of correlation between school attainment and later success in theology and professional academic groups, and a low correlation for the medical profession. (Kramm.) This is not too surprising: theologians and general academic groups need the sort of verbal ability that is helpful to high scholastic attainment; physicians generally do not, at least not to the same extent.

Trout has reported that academic success in high school shows no clear-cut trend with success in later life, but that academic success in college has a significant relationship with financial success later. Mossin (see below) also found no significant correlation between high school grades and selling performance.

There is one study of the relation between high school grades and employment history and income, based on 20,000 Boston high school graduates as subjects. (Ryan and Morton.) No consistent relation was found between school grades and occupational achievements, but there are some intriguing details. Among boys, fewer of the average and inferior students were employed, but those who were had more regular employment than the better students. Perhaps the better students were more easily dissatisfied or more often had jobs that did not utilize their capacities. Inferior scholars had significantly higher weekly earnings than the average scholars did; the superior also earned more than the average scholars did, but this difference was not significant. It is far from clear why the inferior scholars should earn more than the average ones. We do not know what occupations they were in. Perhaps more average scholars went into low-paid white collar jobs, whereas inferior scholars became skilled workers, who are usually better paid. Among the girls, however, the situation was quite different: there was a positive relationship between school marks and each of various measures of employment advantage: numbers employed, income, job continuity, etc. The authors suggest that this may be in part because more girls who would seek immediate employment took commercial courses and hence were better trained.

Jepsen studied income and college grades of male graduates of Fresno State College from 1929 to 1941. He found no relation between grades and income for the total group or within different occupational groups. On the other hand he did find an average correlations of +.27 between number of extracurricular activities and incomes for the various occupational groups. The figures for separate groups are:

Professional	($n = 27$)	+.06
Administrators	($n = 39$)	+.28
Business	($n = 110$)	+.23
Teaching	($n = 117$)	+.32

In another study of extracurricular activities, Soderquist reported a bi-serial correlation with teaching success, as rated by public school superintendents, of +.25. His 407 subjects were a rather special population, being in a work-relief project for unemployed teachers. It was interesting that 80 per cent of the women who had participated in extracurricular activities, and only 59 per cent of those who had not, were in the above-average group, but that for the men there was no difference related to extra activities. Extracurricular activities also showed some relation to distinction in *Who's Who*, according to Knox.

Peterson, Obourn, Wallace, and Smith found little relationship between scholarship in college and success in teaching, when success was measured by ratings by superintendents and principals. They believe this was due to the unreliability of the ratings. When scholarship was compared with salary, the correlation for men principals and high school teachers was +.71 (over twice that found by Jepsen), and for women elementary and high school teachers it was +.64. Stuit also found very little relationship between teaching and university grades (bi-serial $r = +.314$), with ratings by superintendents and principals as a criterion.

Much higher correlations were reported by Tudhope in England. Inspectors' estimates of teaching ability of 96 experienced men and women correlated +.81 with college final marks. The difference may lie in the reliability of the ratings (perhaps his inspectors were better acquainted with the subjects) or in the validity of the grade scoring system, or both. Whatever the cause, such discrepancies make any general estimate of the situation impossible.

One may also interpret success in terms of satisfaction or contentment rather than in terms of income or superiors' ratings. In a study of 169 Hunter College students (women) Crosby reported that, 9 months after graduation, there was no significant relation between job satisfaction and academic achievement. Job satisfaction was measured by a questionnaire which gave the following distribution: 63 per cent satisfied, 25 per cent indifferent, and 12 per cent dissatisfied.

Mossin investigated selling performance and contentment in relation to school background. His subjects were 94 girls in a New York department store, 15 to 19.5 years old, with reasonably homogeneous selling experience. All were from public high schools. Job contentment was rated by three questionnaires, and job performance was based on ratings of professional women shoppers and supervisors. His subjects were divided into 4 groups, according to whether their high school course had been College Preparatory, Commercial, Clothing Arts, or Distributive Occupations. The Commercial and Distributive Occupations groups were superior in nearly all criteria of selling, but differences were not significant. His findings on relation of various factors to selling performance include:

Negative correlations with number of high school credits.
No significant correlations with scholastic achievement.
Negligible correlations with high school absences and tardiness.
Negative but insignificant correlations with age.
A correlation of +.21 with IQ ($P = .07$).

The Distributive Occupations group was better than all the others in all but one item of a 10-item job-condition satisfactions rating, in job-functions interest, and in number of hours in retail saleswork. The College Preparatory was generally inferior to the others in all these, which is not surprising. Presumably those who had taken the

College Preparatory course had had higher aspirations than retail selling, and would therefore be likely to be more critical and less satisfied. He also noted, among the non-Distributive groups, a tendency to an inverse relation between contentment and the amount of high school training after the sophomore year. He attributes the superiority of the Distributive group to "predisposition" rather than to the courses they had taken. In other words, it would seem that those who were doing more or less what they had originally thought of doing, or planned to do, were more effective and more satisfied than those who had presumably drifted into the work, and particularly than those who had had some other aspirations.

Eminence

Studies so far mentioned have concerned success or satisfaction. Other studies are concerned with the concomitants of "eminence." This is defined in these studies as being listed in *Who's Who.*

TABLE 9.4. PERCENTAGE OF ENTRIES IN WHO'S WHO REPORTING COLLEGE GRADUATION IN 1899 AND 1934 (AFTER SMITH, 1940)

Field	1899	1934
Education	72	97
Army and Navy	55	91
Science	55	89
Religion	53	89
Law	46	82
Medicine	42	100
Technical engineering	37	77
Journalism	33	49
Author	27	51
Public office	22	59
Business	12	50
Arts	8	9
Music	6	21
Theater, motion pictures	0	9

Knox, with a sample of 8 Harvard graduating classes, from 1880 to 1925, found graduation with honors significantly related to inclusion in *Who's Who,* and the likelihood increased with the level of honors received: 17 per cent of the *cum laude,* 27 per cent of the *magna cum laude,* and 58 per cent of the *summa cum laude* graduates were listed. Extracurricular distinctions also showed some relation to inclusion in *Who's Who,* representations being 37 per cent for college literary activities, 26 per cent for executive activities, and 13 per cent for athletic. A combination of scholastic honors and outstanding extracurricular achievement supplied the best basis for predicting future success.

An interesting study by Smith shows trends in educational requirements. He also accepted inclusion in *Who's Who* as the criterion of eminence. The figures for percentages of persons in different fields reporting college graduation in 1899 and 1934 are shown in Table 9.4. It seems probable that these trends have continued and that achievement of recognition in most fields will be increasingly difficult in the future without a high level of formal education. Art may remain an exception.

BIOGRAPHICAL FACTORS

A number of biographical factors have shown some relation to success and to eminence, as well as to choice of profession. Factors relating to choice of a specific occupation will be discussed in Chapter 21. Biographical factors may include such elements as place of birth, family discipline, ordinal position in the family, and so on. Maslow's theories of the relation between early gratification and later development of frustration tolerance have apparently not been directly applied in this field, but such data as those of Friend and Haggard, reported below, can be interpreted in these terms. It is probable that further studies of gratification in relation to later life performance would be extremely fruitful.

During World War II, several agencies found a biographical inventory useful in selective procedures, although validity coefficients were generally lower than for custom-built indices or standard tests. Similar studies have been made in industry. For example, Kerr and Martin computed tetrachoric correlations between job success (based on merit ratings) and 20 items in the application blank for 244 factory employees. They found that approximately 10 per cent of job success could be accounted for by biographical factors. Correlations significant at 5 per cent or better are reported in Table 9.5.

Long also found that more boys are employed than girls, in a study of 469 boys and 429 girls who left school at or before high school graduation between 1934 and 1948. He noted, too, that deviation from the traditional family pattern was related to a lower percentage of employment among the boys, but a higher percentage of employment among the girls. He did not find any relationship between height and weight and regularity of employment nor with any measures of family status or relationship, such as socioeconomic status of home, number of employed siblings, birth order, family size, or broken homes.

General geographical location has considerable significance for ad-

TABLE 9.5. TETRACHORIC CORRELATIONS BETWEEN JOB SUCCESS AND APPLICATION BLANK ITEMS (KERR AND MARTIN)

Item	Correlation
Sex, female	−.16
Single	−.18
Married	+.30
Street address (areas)	
A[a]	− 22
B	+.23
C	+.15
D	− 11
Born in same state	+.15
Weight, for males	−.27
Former employee	+ 22
Number of personal references given	−.17
Number of organization memberships	+.23
Number of hobbies	−.18
Special training	+.15
Number of previous positions	−.22

[a] Area A contained the highest percentage of upper socioeconomic level homes.

vanced work and for achievement: residence in some localities increases markedly the chances of going on in science, or of becoming well-known. This has been shown by Thorndike to be related to what he calls the "goodness" of the area. "Goodness" is a very complex measure including economic and social data, as well as number of libraries, available education, and so on. He listed entries in *Leaders in Education* (1932), *American Men of Science* (1938), and *Who's Who* (1938–1939), by state, and devised a composite measure (SBQ) of the states' relative productivity of superior persons. The rank order correlation of the different states on this measure and a measure of "Goodness" is +.79. The ranks of the different states in terms of production of superior persons are given in Table 9.6, page 128.

The study of Knapp and Goodrich on the origins of American scientists also found geographical location to be of the most striking significance, with the Mid- and Far West high in their contribution of scientists. Such data as these emphasize the importance of impersonal factors in achievement. There are, however, high achievers from every area, and which particular individuals in any area are those who reach a high level is largely a personal matter. It is clear that raising the general educational and social level of any community will result in increasing the number of contributors to society generally.

TABLE 9.6. RANK ORDER OF STATES BY A COMPOSITE MEASURE OF RELATIVE PRODUCTIVITY OF SUPERIOR PERSONS (SBQ) (AFTER THORNDIKE)

Rank	SBQ	State
1	170	Utah
2	164	Massachusetts
3	148	Connecticut
4	142	Idaho
5	141	Colorado
6	140	New Hampshire
7	139	South Dakota
8	136	Wyoming
9	132	Vermont
10	130	Maine
11	128	Rhode Island
12	118	North Dakota
13	116	Iowa
14	115	Kansas
15	115	Washington
16	115	Nebraska
17	114	Montana
18	113	Nevada
19	110	Ohio
20	108	Minnesota
21	104	Indiana
22	103	California
23	102	Wisconsin
24	102	Oregon
25	99	Michigan
26	98	New York
27	97	Illinois
28	95	Maryland
29	93	Delaware
30	83	Pennsylvania
31	78	Missouri
32	77	New Jersey
33	72	Arizona
34	71	Oklahoma
35	70	Virginia
36	67	West Virginia
37	51	South Carolina
38	51	North Carolina
39	50	Kentucky
40	49	Texas
41	46	Tennessee
42	41	Alabama
43	38	Florida
44	37	Arkansas
45	36	Mississippi
46	36	Georgia
47	35	New Mexico
48	32	Louisiana

Family influences

Factors in the general family climate not directly related to socioeconomic status may be of prime importance in later vocational adjustment. As has been remarked before, difficult as research of this sort is, it would probably be more fruitful than the amassing of assorted test scores. Friend and Haggard have done the only comprehensive study so far available. Their subjects were 80 clients of a vocational counseling service, 67 of them men, and all between 16 and 36 years old. Most were jobless at the time. They were rated on 173 items of family background, and divided into groups according to their occupational adjustment, achievement, and improvement after counseling. About 25 per cent were placed in High and in Low groups for each of these divisions. Adjustment and achievement were not closely related; people high in achievement may or may not adjust well, but people low in achievement probably will not. Family integration and attitude towards father are important in adjustment, but make little difference in achievement; antagonism for the mother, however, is positively associated with both. Differences between the early life histories of Highs and Lows in occupational adjustment are shown in Table 9.7. The authors make the important point that, whether or not a worker makes special demands of the job or needs special appreciation and status, depends upon the amount of deprivation during his early life; that he goes after the identical and specific satisfactions in his work which were denied him years before. This is clearly in accord with the theoretical position of Maslow, and is of primary importance for understanding satisfaction and adjustment in work. If one must find in work satisfactions which are not intrinsic to it, it is clear that the work itself must suffer. Nor can work satisfy all serious deficiencies of the past although it can be a major satisfier of present needs.

TABLE 9.7. WORK ADJUSTMENT IN RELATION TO EARLY LIFE, DIFFERENCES BETWEEN HIGHS AND LOWS IN ADJUSTMENT (FRIEND AND HAGGARD)

High	Low
Striking Differences	
Closely knit, strongly unified family	Disorganized families, lack of "togetherness"
More affection for father	More antagonistic to parents
More independent	More sibling rivalry
Milder ambivalence toward early homes	
Clear-Cut Differences	
School more satisfying	More sense of rejection
Narrow Differences	
More positive feeling for mother	More deviant family members
Religious values stressed	Family disruption pronounced
More gregarious	More often "favorites," spoiled
More formal education and special training	More discordant homes
No Differences	
Illness of subject as child or in family	
Money troubles	
Family size and birth order of subject	

Long, as well as Friend and Haggard, found no relation between adjustment and ordinal position in the family. Ordinal position appears, however, to have some relation to achievement at a high level. Data are available for scholars and scientists. Cattell and Brimhall found that the incidence of first-born in their sample of 855 scientists was much higher than could be expected by chance, and the data of Visher and my own data give similar results. Apperly made a study of 930 American Rhodes scholars, and also found a great predominance of eldest sons from small families, diminishing as family size increased, as well as a predominance of only sons. Whether a similar relationship holds between birth order and achievement of eminence in other fields is not known.

There are some difficulties in interpretation of this finding. A number of studies have found that first-born are disproportionately numerous in various groups of problem children (Goodenough, Rosenow, Thurstone). (They are not, however, more numerous among manic-depressives and schizophrenics according to Malzberg.) Wile and Jones reported that order of birth does not determine behavior characteristics, but a number of other studies have found personality differences between first and second children. Martin believes that first children are likely to be subjected to excessive parental demands and expectations, and that this tendency will be strengthened with male first-borns and in families where the father is very successful or the family is tradition-dominated. McArthur sums up the best documented personality differences found in the Grant study as sensitive seriousness of the first child and easy-going friendliness of the second. Lasko in a study of parent behavior towards 46 pairs of siblings reports among other differences that the parents are less warm emotionally and more restrictive and coercive towards first children than towards second and later ones. It would seem probable that such differences may well stem largely from the greater security of a parent in handling later children. A new baby has its fearsome aspects, and inexperienced parents are likely to feel it can fall apart in their hands. A study of parents' fears for their children would probably show many fewer ones after the first child, and much greater feelings of ease and comfort in the parental relation.

It is also possible that first-born children may have more independence; in any event, they must all, in a sense, be supplanted. Younger siblings, particularly those near in age to the next older, are often subject to a special sort of frustration, of never being quite able to keep up with the older simply because of lesser development. This may be particularly important if they are of the same sex. Thurstone has noted better prognosis for behavior adjustment of problem children if the next older or younger sibling is of the opposite sex.

Busemann, in Germany, has noted some differences in occupational choice associated with the number of brother and sisters. His subjects were 169 children in an intermediate school. He found that children choosing higher-ranking professions usually belonged to a relatively large family (56 per cent from families with more than 2 children), whereas only 22 per cent of those who chose the father's profession came from large families. The difference was not associated with social level. He concluded that the presence of several brothers and sisters acts as a stimulant.

In summary, early family relationships are of importance for occupational adjustment and achievement, but we are just beginning to learn the details. Direct study of amount and kind of instinctual gratifications in relation to later behavior, including occupational behavior, should clarify the situation greatly.

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PART

III

Occupations Differ

10. The Structure of Occupations in the United States

11. The Classification of Occupations

12. The Classification of Occupations (Continued)

13. Group I Occupations: Service

14. Group II Occupations: Business Contact

15. Group III Occupations: Organization

16. Group IV Occupations: Technology

17. Group V Occupations: Outdoor

18. Group VI Occupations: The Sciences

19. Group VII Occupations: General Cultural

20. Group VIII Occupations: Arts and Entertainment

CHAPTER 10

The Structure of Occupations in the United States

People earn their livings in hundreds of different ways, and the numbers and kinds of possible ways vary greatly from one community to another. So do the proportions of workers of different sex and ages. In this chapter we shall bring together data to provide an idea of the over-all picture in the United States. These data are all based upon information gathered by the United States Census. The categories in which they are presented are those developed by the Census for these purposes, but they are not always just those which we should like to have. Census tabulations may be by type of industry or by kind of work. For both these sorts of tabulations the precise categories have changed from one decade to another so that direct comparisons from one census to another for the purpose of noting trends are sometimes not very exact.

The first question is naturally, "How is the population divided with respect to primary activities?" This is shown for 1946–1947 in Table 10.1. Something under half the population was in the country's labor force in that year.

Another question concerns the age and sex of the working force. Table 10.2 gives such information for 1900 and for 1950, in terms of

Table 10.1. Primary Activity of the Population, 1946–1947 (from Miller and Form)

	Percentage
Under 5 years	8.7
5–15 years, not at school or gainfully employed	1.5 (est.)
At school	19.0
Housewives not gainfully employed	21.2
Persons gainfully employed	42.5
Institutionalized adults	0.8 (est.)
Not accounted for (including unable to work)	6.3 (est.)
	100.0

the percentage of the total population in each age and sex class tha is in the labor force. It is clear that the age and sex composition o the labor force have changed markedly in this 50-year period. The greatest difference is in the percentage of males, 14 to 19 years. The decline from 1900 is due to changes in school attendance laws and customs, and the lengthening of the training period for many occupations. Presumably, although 1950 saw a rise over 1940 in this figure the general downward trend will continue. The same, but a less marked, change has occurred in the figures for females.

TABLE 10.2. LABOR FORCE BY SEX AND AGE AS A PERCENTAGE OF THE POPULATION FOR 1900 AND 1950 (DATA FROM BAER AND ROEBER)

	1900[a]		1950[a]	
	Males	Females	Males	Females
Total, 14 and Over	80.9	27.4	82.5	31.9
14–19	38.3	19.9	47.5	26.4
20–24	89.2	47.8	86.8	44.4
25–34	96 3	35.3	94.5	33.5
35–44	96.6	27.3	96.6	38.1
45–54	93 7	24.2	94.7	36.9
55–64	85.7	17.8	85.2	27.4
62 and over	43.4	6.7	45.1	9.5

[a] Estimates comparable to current *Monthly Report of the Labor Force*, for April, from U. S. Bureau of the Census.

The relative numbers of persons engaged in different kinds of work have also changed markedly. The data for 1900 and 1950 are shown in Fig. 10.1. One of the most important changes is the decrease in agriculture as a way of making a living.

The kinds of workers who are engaged in these different industries, etc., are shown in Fig. 10.2, as well as the changes in proportionate numbers in each for each decade from 1910 to 1950. In Table 10.3 on page 139, a further breakdown is shown. This gives the percentages of all experienced workers, 14 years and over, in major occupational groups for each sex, and for the total working force. This arrangement of the census occupational categories is a "social-economic" one devised by Alba M. Edwards.

Differences in the sex distribution of occupations are of considerable interest. Anderson and Davidson give a full discussion of occupational trends as shown in censuses up to 1940. The number of women in the labor force is increasing rapidly. In 1900 there were some 5,000,000; in 1949, about 17,000,000. In relation to the total number of women of 14 years or more, the proportion working rose from a fifth

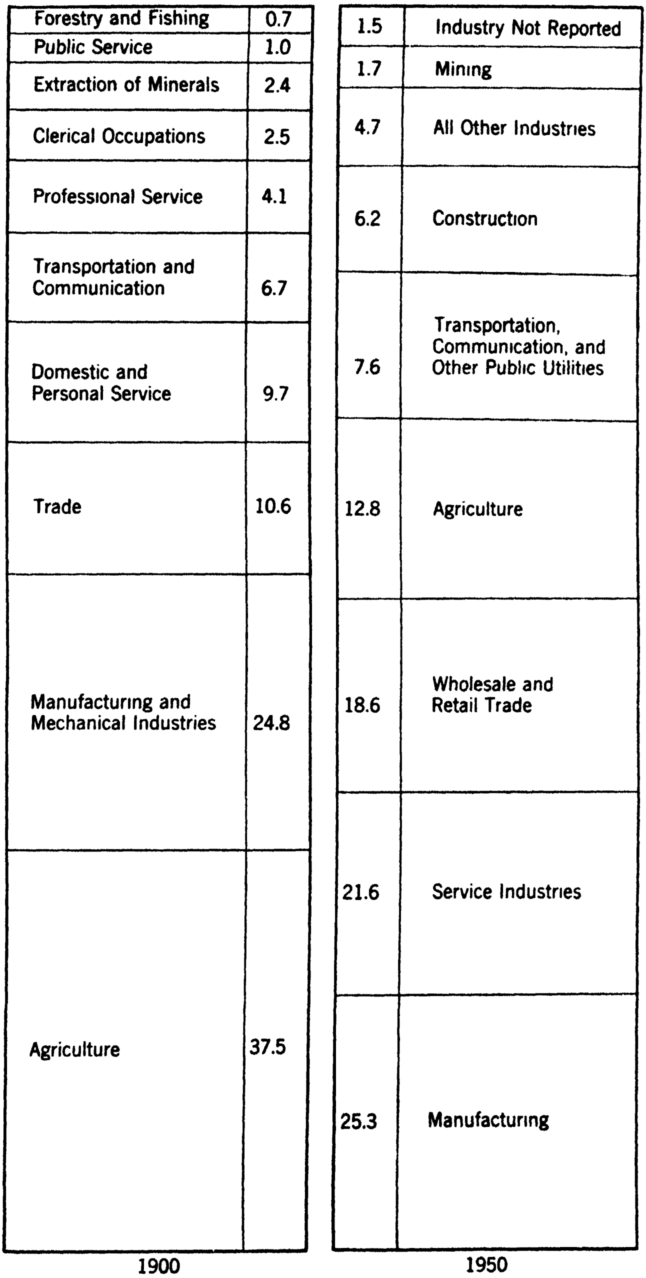

Fig. 10.1. Kinds of work occupying the labor force, 1900 and 1950. (From Clague.)

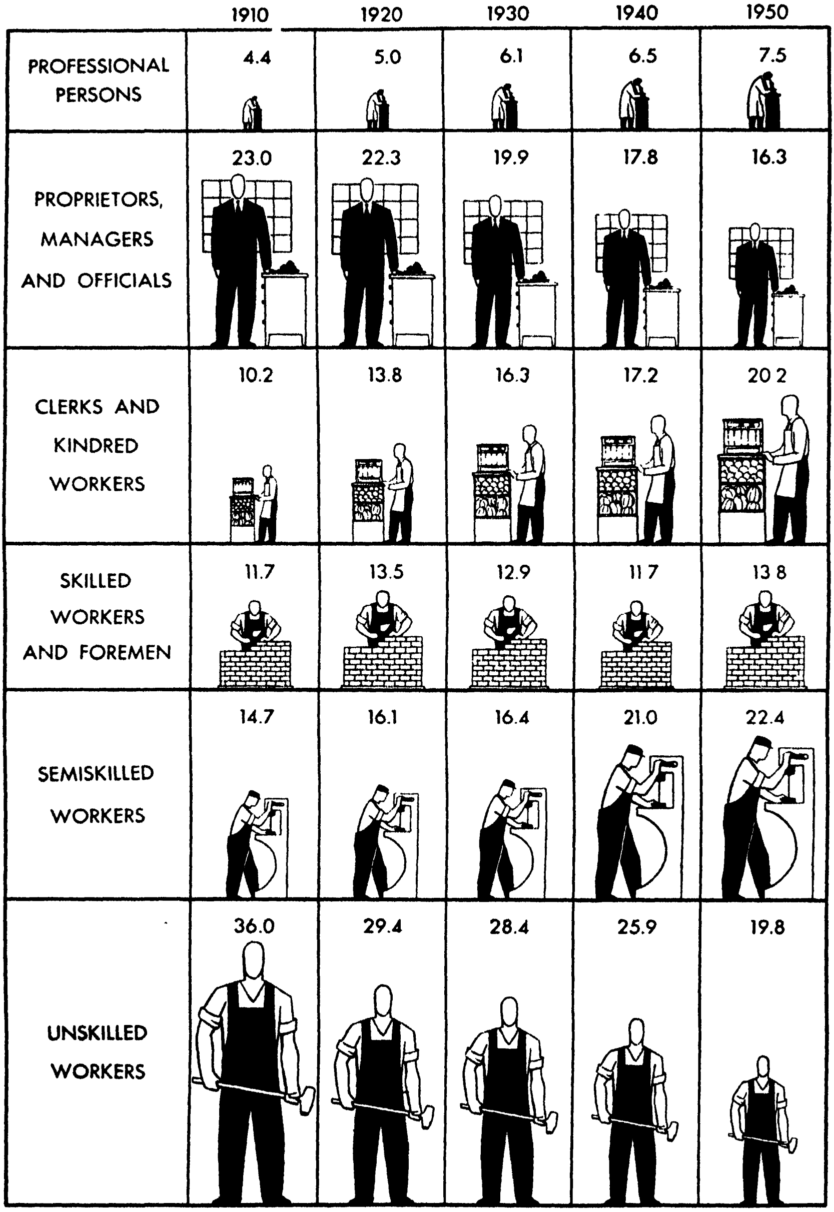

Fig. 10.2 Kinds of workers in the labor force, by decades, 1910–1950. (From Clague.)

TABLE 10.3. PERCENTAGES OF ALL WORKERS, 14 YEARS AND OVER, IN MAJOR OCCUPATIONAL GROUPS IN 1940 (BAER AND ROEBER)

	Male	Female	Total
Professional persons	4.7	12.2	6.5
Farmers (owners and tenants)	13.0	1.2	10.1
Proprietors, managers, and officials			
Wholesale and retail	4.7	1 4	3.9
Others	4.4	1.6	3.7
Clerks and kindred workers	13 4	29.1	17.2
Skilled workmen and foremen	15.2	0 8	11.7
Semi-skilled workmen	18.6	28.5	21 0
Unskilled			
Farm laborers	8.5	2.7	7.1
Laborers, except farm	13.8	1.0	10 7
Servant classes	3.8	21.4	8.0

to almost a third. The greatest part of this increase is in the number of married women now working; in 1949 one out of every four married women was working outside the home.

Negroes constitute by far the largest proportion of nonwhites in the population. In 1940, of the 101,000,000 persons 14 years and older in the United States, 9,259,000 were Negroes, and 415,000 were other nonwhites. There is a tendency for proportionately fewer whites to be in the labor force: the percentages are given below.

	Percentages		
Group	Male	Female	Total
White	78.9	24.1	51.6
Negro	80.1	37.8	58.2
Other races	75.9	22.8	78.9

There are marked geographical differences. In the South, Negroes constitute approximately a fourth of the labor force, but elsewhere they constitute less than 5 per cent.

Like the white labor force, the Negroes have changed markedly in their occupational distribution from 1940 to 1949. The numbers employed in agriculture and domestic service have decreased notably. These data are shown in Table 10.4 on page 140.

Major differences in occupations of white and Negro men and women are contrasted in Table 10.5, so far as the figures are available, on page 140. (Compiled from Davidson and Anderson.)

Another way of getting at the differences in occupational opportunities open to whites and Negroes is to investigate what college graduates

TABLE 10.4. PER CENT DISTRIBUTION OF EMPLOYED NEGROES BY MAJOR OCCUPATIONAL GROUPS, 1940 AND 1949 (BAER AND ROEBER)

Major Group	1940	1949
Total	100.0	100.0
Agricultural	35.1	18.2
Non-agricultural	64.9	81.8
Non-agricultural workers	100.0	100.0
Service workers	52.2	39.1
Domestic service	34.7	19.4
Other	17.5	19.7
Operatives and kindred workers	15.3	24.4
Laborers	20.5	18.0
Craftsmen and foremen	4.2	5.8
Clerical and sales workers	2.3	5.1
Professional and semi-professional	3.9	3.8
Proprietors, managers, and officials	1.6	3.6

TABLE 10.5. PERCENTAGES OF EXPERIENCED WORKERS IN MAJOR OCCUPATIONAL GROUPS, BY RACE AND SEX, IN U. S. IN 1940 (COMPILED FROM DAVIDSON AND ANDERSON)

	Male		Female	
	W	N	W	N
Professional	4.7	1.6	13.7	4.1
Proprietors and officials	10.6	1.3		
Clerical and sales	13.9	2.0	32.8	1.3
Craftsmen and foremen	15.6	4.4		
Operatives	21.2	7.5	20.3	6.2
Service workers (non-protective), including domestic	11.8	3.7	10.9	59.5
Farm operators or tenants	14.0	21.1		
Farm laborers	4.5	14.1		

in both groups are doing. The data given in Table 9.2 are for all college graduates, but the number of Negroes included is practically negligible. Data for Negroes, taken from a study by Johnson of 5,216 Negro college and professional graduates, are given in Table 10.6. They are very similar to those for two other groups of 4,562 and 7,083 graduates and may be taken as representative of the total group of Negro college graduates in the United States for 1935. There are no data available to show whether the 20 years intervening since then have brought the Negro distribution nearer to the white, but it is probable that there is some movement in this direction.

To round out the general picture, some other data on the labor

TABLE 10.6. OCCUPATIONAL DISTRIBUTION BY NUMBER AND PERCENTAGE OF 5,216 NEGRO COLLEGE GRADUATES IN 1935 (AFTER JOHNSON)

Occupation	*N*	%
Teachers, elementary and high school	1,590	30.6
Physicians	646	12.4
Dentists	392	7.5
College teachers and administrators	304	5.8
School principals and superintendents	241	4.6
Lawyers	186	3.6
Clergymen	161	3.1
Social workers and religious executives	141	2.7
Druggists, pharmacists	111	2.1
Insurance, real estate officials, agents	87	1.6
Musicians, music teachers	70	1.3
Mail clerks, carriers	63	1.2

Occupation	*N*	%
Office clerks	42	0.8
Librarians	40	0.8
Accountants, bookkeepers	34	0.7
Authors, editors	30	0.6
Secretaries	29	0.6
Business officials	28	0.5
Agriculture	26	0.5
Undertakers	23	0.4
Retail dealers	22	0.4
Stenographers	13	0.2
Natural science	12	0.2
Technical engineering	8	0.2
Housewives	240	4.6
Other	676	13.0

TABLE 10.7. NUMBER AND PERCENTAGE IN DIFFERENT OCCUPATIONAL GROUPS IN 1940, MEDIAN EDUCATION, INCOME (COMPILED FROM MILLER AND FORM, DAVIDSON AND ANDERSON)

				Income		
	N	%	Median Education	Median	Under $600 %	Over $2,000 %
Professional, semi-professional	3,381,993	6.5	15.6	1,803	5.7	43.1
Proprietors, managers, officials	9,233,643	17.8	10.9			
Clerks, kindred workers	8,923,939	17.2	12.2	1,275	6.7	19.1
Skilled workers, foremen	6,104,985	11.7	8.5	1,552	3.5	25.9
Semi-skilled workers	10,918,312	21.0	8.5	1,142	10.2	9.3
Unskilled workers						
Farm laborers	3,708,191	7.1	7.4	362	78.1	0.4
Other laborers	5,566,493	10.7	7.7	980	18.7	2.0
Servant classes	4,182,467	8.0	8.8			

force are summarized in Table 10.7. This gives, for 1940, the number and percentage of persons engaged in different occupational groups, the median education and income, and the proportions in each group receiving less than $600 and more than $2,000 per year. Some further data on income are reported in Chapter 23.

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CHAPTER 11

The Classification of Occupations

There are 40,023 titles in the 1949 edition of the *Dictionary of Occupational Titles* (DOT), and further specialization seems to be a continuing trend at all levels and in all types of occupations. Clearly some classificatory scheme is essential whenever a discussion of occupations is involved. The character of the scheme to be used will vary with the purpose of the classification.

The DOT assigns to each occupation a code number. The first digit of this number indicates which major group the occupation has been put in. These major groups are indicated in Table 11.1.

Table 11.1. Major Occupational Groups and Their Major Subdivisions, Occupational Classification and Code of the U. S. Employment Service

- 0- Professional and managerial occupations
  - 0-0 through 0-3: Professional occupations
  - 0-4 through 0-6: Semiprofessional occupations
  - 0-7 through 0-9: Managerial and official occupations
- 1- Clerical and sales occupations
  - 1-0 through 1-4: Clerical and kindred occupations
  - 1-5 through 1-9: Sales and kindred occupations
- 2- Service occupations
  - 2-0: Domestic service occupations
  - 2-2 through 2-5: Personal service occupations
  - 2-6: Protective service occupations
  - 2-8 and 2-9: Building service workers and porters
- 3- Agricultural, fishery, forestry, and kindred occupations
  - 3-0 through 3-4: Agricultural, horticultural, and kindred occupations
  - 3-8: Fishery occupations
  - 3-9: Forestry (except logging), and hunting and trapping occupations
- 4- and 5- Skilled occupations
- 6- and 7- Semiskilled occupations
- 8- and 9- Unskilled occupations

Census data are classified somewhat differently. The two systems used for the census were exemplified in Fig. 10.1 and in Table 10.3.

These classifications are not of much value psychologically, nor can they be adapted to any psychological interpretation. They have little relation to personal requirements, and very little relation to interests. They do have some relation to skills and training, but this is irregular.

The Minnesota Occupational Rating Scales (MORS) have been mentioned before. In addition to the ratings for each of seven abilities for 432 occupations, these occupations have been classified by similarity of ability pattern. This resulted in 214 patterns. This is a helpful approach for the vocational counselor, but 214 classes is too large for survey purposes, and there are other occupations which will fit into none of these classes.

For a meaningful organization of the occupational data to be presented in this book, it was necessary to devise a different sort of classification. Occupations have many aspects, and a single categorization is inadequate. An *n*-dimensional classification would be required for great precision; a 3- or 4-dimensional classification would not be very difficult, but for our purposes a 2-way classification seems adequate. The one in this book is a modification of an earlier one.* As the classification is tried out in different circumstances, and as more information is obtained on different occupations, it is to be expected that further revisions will be in order.

In this scheme, every occupation is classified in each of two sets of categories, one called Groups and the other Levels. Group subdivisions indicate the primary focus of activity in the occupation. There are eight Groups. Classification into Levels depends upon the degree of personal autonomy and the level of skill and training required. There are six Levels. This results in an 8- by 6-celled table. Group subdivisions are indicated by Roman numerals, and Level subdivisions by Arabic numerals; the position of any occupation can be given by the numerals representing the cell in which it belongs.

The table is so arranged that contiguous cells are related. Levels are arranged in hierarchial order, with Level 1 at the top and each successive Level requiring less skill and/or training and involving less responsibility. Groups are so arranged that, with one exception, contiguous ones are more closely related than noncontiguous ones.

* A first attempt at constructing such a classification was reported in 1954, as mentioned in the Preface. This classification was given a reliability study by the staff of the Career Pattern Study (Moser, Dubin, and Shelsky). The present revision is largely based on their findings. Some suggestions from seminar groups here and in Brazil have also been incorporated.

Each of Groups IV, V, and VI is related to the other two to about the same degree. Group V, placed between IV and VI, obscures the close relationship between these two. The Groups are arranged in this order because IV is also related to III and VI to VII, whereas V is less closely related to any of the others. The arrangement should be thought of as circular, that is, Group VIII is related to Group I as well as to Group VII.

CLASSIFICATION BY PRIMARY FOCUS OF ACTIVITY: GROUPS

Categorization by primary focus is related to most factorizations of interest, but is not identical with any of them. The focus of an occupation may be on personal interactions, supportive or exploitative, close or more distant, personal or administrative. It may be on activities involved in the first handling of natural resources, or in their conversion into commodities, or in the organizational structures required for these activities. It may be on development and application of knowledge, or the preservation of the institutions and the accumulated knowledge of the culture. The specific Groups are outlined below:

I. SERVICE. These occupations are primarily concerned with serving and attending to the personal tastes, needs, and welfare of other persons. Included are occupations in guidance, social work, domestic and protective services. In addition to occupations from DOT code 0- (see Table 11.1) most of those with code 2- are placed here. The armed services, grouped with other protective services in the DOT and placed here by Moser, Dubin, and Shelsky, are a very difficult group. It would seem better, for the time being, at least, to distribute them in accordance with the location of the civilian counterparts, i.e., chiefly in Groups III, Organization, and IV, Technology. However, the serviceman whose primary job is analogous to that of the domestic protective services is placed here.

II. BUSINESS CONTACT. These occupations are primarily concerned with the face-to-face sale of commodities, investments, real estate, and services. Also included are such occupations as demonstrator, auctioneer, and some kinds of agents. A distinction is made in sales occupations between those in which the job is personal persuasion, which belong here, and those in which the selling is routine, and the person-to-person relation relatively unimportant, which belong in the next Group. Occupations in this Group are all classified in DOT code 2-, but not all DOT code 2- occupations belong in Group II.

III. ORGANIZATION. These are the managerial and white collar jobs in business, industry, and government, the occupations concerned primarily with the organization and efficient functioning of commercial enterprises and of government activities. Most of DOT codes 0-4 through 0-9 and 1-0 through 1-9 belong in this Group. This Group and Group IV contain the largest numbers of occupations.

IV. TECHNOLOGY. This Group includes occupations concerned with the production, maintenance, and transportation of commodities and utilities. Here are occupations in engineering, crafts (including repair work), and the machine trades, as well as transportation and communication. Whether a physical scientist, e.g., belongs in this Group or in Group VI depends upon the setting in which he is working. Upper Level occupations are found in DOT codes 0-4 through 0-9, the others in codes 4-, 5-, 6-, 7-, 8-, and 9.

V. OUTDOOR. This Group includes agricultural, fishery, forestry, mining, and kindred occupations: the occupations primarily concerned with the cultivation, preservation, and gathering of crops, of marine or inland water resources, of mineral resources, of forest products, and of other natural resources, and with animal husbandry. All the DOT code 3- occupations, and some others, belong here.

VI. SCIENCE. These are the occupations primarily concerned with scientific theory and its application under specified circumstances, other than technology. Most of the occupations are listed in the DOT under the code 0-.

VII. GENERAL CULTURAL. These occupations are primarily concerned with the preservation and transmission of the general cultural heritage. The Group embraces occupations concerning the subjects usually called the humanities in college catalogues, but it is broader than these. It includes occupations in education, journalism, jurisprudence, the ministry, linguistics, and so on. All elementary and high school teachers are included in this Group. At higher levels teachers of science and art are placed in Groups VI and VIII. This is somewhat arbitrary, but it has been done to allow for the fact that teachers at the college level are often more interested in the subject matter than in teaching, and because, in art and science, teachers at the college level are frequently engaged in research or other creative activity which places them more appropriately elsewhere.* These occupations are in DOT code 0-.

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* In the original form of this classification, teachers and performers were assigned two separate Levels, and distributed through the Groups by subject matter. Performers, however, could not be assigned with any reliability, and separation of teachers from other professional groups proved awkward.

VIII. ARTS AND ENTERTAINMENT. These occupations include those primarily concerned with the use of special skills in the creative arts and in the field of entertainment. Both creators and performers are included. In the DOT these occupations are classified chiefly in 0-0 through 0-6.

Classification into these categories, though usually not difficult, must sometimes be arbitrary, and there are some special problems. One general rule is that occupations which are essentially supportive are placed in the Group containing the occupation to which they are ancillary.

The occupation of psychologist exemplifies one sort of problem. Some psychologists seem to fit into one of these groups, some into another. That personal therapists generally are placed in Group I means that clinical and counseling psychologists go there, but other psychologists go in Group VI. It is not implied thereby that the principles on which therapy is based are not scientific; these occupations go in Group I because of the primary importance of the nature of the personal relationship. The clergy in general are classed in Group VII, but some few whose primary orientation is social welfare rather than theology might better go in Group I.

It seldom happens that occupationally anyone functions in more than one of these Groups, and changes during the occupational life of an individual, if they involve more than one Group, are most likely to involve Groups adjacent in the table. There is one striking exception. The job of housewife-mother encompasses in one person occupations which separately would be classified in Groups I, VII, and VIII, and at all Levels. There seems to be no other occupation requiring as many different kinds of skills or as many different kinds of decisions.

Classification by focus is clearly related to classifications of interests. Factorization of interests based on various tests has already been discussed. None of these tests covered the whole range of occupations, as we are trying to do now, but the factors isolated in these different studies were taken into account in devising this classification. An idea of the way in which special interests enters into the classification is given in Table 11.2, which charts the factors found in six studies, and the Groups in this classification in which each is probably of particular significance. This has not been experimentally determined. Guilford did not consider Physical drive and Preference for outdoor work as vocational factors, but they seem clearly related to Group V. Some factors may enter into more than one Group. For example, the language or verbal factors found in all these studies enter into VII

TABLE 11.2. INTEREST FACTORS AND CLASSIFICATION BY PRIMARY FOCUS

Classification	Vernon	Thurstone	Darley	Strong	Kuder	Guilford, et al.
I. Service	Social welfare vs. administrative Gregarious vs. isolated	People	Welfare uplift	People	Social service	Social welfare
II. Business Contact	Gregarious vs. isolated	People	Business contact	Business contact	Persuasive	Business
III. Organization	Administrative vs. social welfare	Business	Business detail CPA	Business system	Clerical Computational	Business Clerical
IV. Technology	Scientific vs. display Isolated vs. gregarious	Science	Technical	Things vs. people	Scientific Mechanical Computational	Scientific Mechanical
V. Outdoor	Active vs. verbal				Outdoor	Physical drive Preference for outdoor work
VI. Science	Scientific vs. display Isolated vs. gregarious	Science	Technical	Things vs. people	Scientific	Scientific
VII. General Cultural	Verbal vs. active	Language	Verbal	Language	Literary	Cultural
VIII. Arts and Entertainment	Display vs. scientific	Language	Verbal	Language	Artistic Musical Literary	Aesthetic expression Aesthetic appreciation Cultural Physical drive in some Active vs. verbal

and are important for some occupations in VIII. This is not to say that only the factors noted are of importance in any Group. There is some overlapping in the Groups as there is in persons.

Classification by primary focus does not give any indication of the type or level of function that the person performs in the occupation. For this another classification is needed. The one proposed is outlined below.

CLASSIFICATION BY LEVEL OF FUNCTION

This classification is based upon degrees of responsibility, capacity, and skill. It should be noted that these are not exactly correlated. Whenever there are marked differences, level of responsibility is considered primary. By level of responsibility is meant not only the number and difficulty of the decisions to be made, but also how many different kinds of problems must be decided. This is an aspect that has not been much considered, yet in terms of the meaning and value of the occupation to the individual it is of the utmost importance.

The same title may be referred to different Levels. For example, business executives, depending on their duties, may be in Level 1, 2, 3, or 4. Some useful criteria are stated below. These are not rigid, and they will not always apply In Group VIII occupations at any Level, for example, education is often irrelevant.

1. PROFESSIONAL AND MANAGERIAL 1: INDEPENDENT RESPONSIBILTY. This Level includes not only the innovators and creators, but also the top managerial and administrative people, as well as those professional persons who have independent responsibility in important respects. For occupations at this Level there is generally no higher authority, except the social group. Several criteria are suggested:

a. Important, independent, and varied responsibilities.

b. Policy-making.

c. Education: When high-level education is relevant (it is not required in the creative arts, for example, or a necessity for dictators, or even for our own high government officials) it is at the doctoral level or the equivalent.

2. PROFESSIONAL AND MANAGERIAL 2: The distinction between this Level and Level 1 is primarily one of degree. Genuine autonomy may be present but with narrower or less significant responsibilities than in Level 1. Suggested criteria are:

a. Medium-level responsibilities, for self and others, both with regard to importance and variety.

b. Policy interpretation.

c. Education at or above the bachelor level, but below the doctorate or its equivalent.

3. SEMI-PROFESSIONAL AND SMALL BUSINESS. The criteria suggested here are:

a. Low-level responsibility for others.

b. Application of policy, or determination for self only (as in managing a small business).

c. Education, high school plus technical school or the equivalent.

4. SKILLED. This and the following levels are classical subdivisions. Skilled occupations require apprenticeship or other special training or experience.

5. SEMI-SKILLED. These occupations require some training and experience but markedly less than the occupations in Level 4. In addition, there is much less autonomy and initiative permitted in these occupations.

6. UNSKILLED. These occupations require no special training or education and not much more ability than is needed to follow simple directions and to engage in simple repetitive actions. At this Level, Group differentiation depends primarily upon the occupational setting.

Classification into Levels 4 through 6 presents some special difficulties. When personal responsibility and the skill required for a job are not at approximately the same level, the occupation is classified at the level of responsibility, by the degree of personal initiative and judgment allowed or required. Many occupational designations, as farmer, include persons working at extremely varied levels of skill and responsibility, but there is no terminology indicating these differences clearly. The farmer who is, in fact, an individual enterpreneur, belongs in Level 3; other individual farmers would belong in 4; farm tenants and sharecroppers belong in 5; farm hands go in 6.

Where there is no question of level of responsibility, occupations are classified into Levels 4 through 6 largely in accord with the DOT classifications: DOT codes 4- and 5- go in Level 4; codes 6- and 7- in Level 5; and codes 8- and 9- in Level 6. Occupations in other DOT codes are not classified by level of skill and responsibility. For these, MORS ratings are used where these are available. The MORS rates the required amounts of Academic ability, Social ability, etc., on 4-step scales. In general, occupations classified in Level 6 have ratings above D (the lowest MORS rating) on the Physical agility scale only. Occupations classified in 5 must have at least 2 ratings above D and usually 3, if one of them is Physical agility. To be

TABLE 11.3. TWO-WAY CLASSIFICATION OF OCCUPATIONS

Level	Group							
	I. Service	II. Business Contact	III. Organization	IV. Technology	V. Outdoor	VII. Science	VII. General Cultural	VIII. Arts and Entertainment
1	Personal therapists Social work supervisors Counselors	Promoters	United States President and Cabinet officers Industrial tycoons International bankers	Inventive geniuses Consulting or chief engineers Ships' commanders	Consulting specialists	Research scientists University, college faculties Medical specialists Museum curators	Supreme Court Justices University, college faculties Prophets Scholars	Creative artists Performers, great Teachers, university equivalent Museum curators
	Social workers Occupational therapists Probation, truant officers (with training)	Promoters Public relations counselors	Certified public accountants Business and government executives Union officials Brokers, average	Applied scientists Factory managers Ships' officers Engineers	Applied scientists Landowners and operators, large Landscape architects	Scientists, semi-independent Nurses Pharmacists Veterinarians	Editors Teachers, high school and elementary	Athletes Art critics Designers Music arrangers
3	YMCA officials Detectives, police sergeants Welfare workers City inspectors	Salesmen: auto, bond, insurance, etc. Dealers, retail and wholesale Confidence men	Accountants, average Employment managers Owners, catering, dry-cleaning, etc.	Aviators Contractors Foremen (DOT I) Radio operators	County agents Farm owners Forest rangers Fish, game wardens	Technicians, medical, X-ray, museum Weather observers Chiropractors	Justices of the Peace Radio announcers Reporters Librarians	Ad writers Designers Interior decorators Showmen
4	Barbers Chefs Practical nurses Policemen	Auctioneers Buyers (DOT I) House canvassers Interviewers, poll	Cashiers Clerks, credit, express, etc. Foremen, warehouse Salesclerks	Blacksmiths Electricians Foremen (DOT II) Mechanics, average	Laboratory testers, dairy products, etc. Miners Oil well drillers	Technical assistants	Law clerks	Advertising artists Decorators, window, etc. Photographers Racing car drivers
5	Taxi drivers General houseworkers Waiters City firemen	Peddlers	Clerks, file, stock, etc. Notaries Runners Typists	Bulldozer operators Deliverymen Smelter workers Truck drivers	Gardeners Farm tenants Teamsters, cowpunchers Miner's helpers	Veterinary hospital attendants		Illustrators, greeting cards Showcard writers Stagehands
	Chambermaids Hospital attendants Elevator operators Watchmen		Messenger boys	Helpers Laborers Wrappers Yardmen	Dairy hands Farm laborers Lumberjacks	Nontechnical helpers in scientific organization		

placed in Level 4 an occupation should have 5 or more ratings above D, usually including at least 1 rating of B.

2-WAY CLASSIFICATION

Now let us put these two classifications together, and see what sort of a scheme results. One classification has 8 subdivisions, the other 6, making a table with 48 cells in all. The arrangement is shown in Table 11.3, with a few occupations entered to show how the scheme works. Note that there are some empty cells, that is, some cells for which there seems to be no appropriate occupation. There is no reason why every Level should be represented in every Group. Note, too, that asocial as well as social occupations can be classified by this scheme as well as can hobbies. Where would burglars or prostitutes go, for example, or stamp-collecting or sailing?

Chapters 13 through 20 will give longer lists of classified occupations than can conveniently be included in this table. Each of these chapters presents the available material on all the occupations associated with differences in Group and in Level.

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CHAPTER 12

The Classification of Occupations (Continued)

In this chapter we shall review the studies which cover a wide range of occupations or of occupational levels, in order to gain some over-all glimpse of the personal differences associated with the different categories in the classification. The many studies of one or only a few occupational groups are not discussed in this chapter but will be considered in the following chapters in the appropriate Group. Intelligence, education, and socio-economic status are much more closely related to Level than they are to Group. On the other hand such aspects of personality as interests and attitudes, and others less well studied, are more closely related to Group than to Level.

The data on all these issues are far fewer than are needed for more than a tentative formulation of general relationships. In part this has been the result of lack of a psychological classification of occupations. In larger part it is because one worker almost never has access

TABLE 12.1. DISTRIBUTION OF AGCT SCORES OF OCCUPATIONS CLASSIFIED BY GROUPS (DATA FROM STEWART)

Standard Deviations from the Mean	Groups								
	I	II	III	IV	V	VI	VII	VIII	Total
+2.0–+2.5			2	1					3
+1.5–+2.0			2				2	1	5
+1.0–+1.5	1		11	4	1	2	1		20
+0.5–+1.0		1	9	14	2	3		4	33
0.0–+0.5	4		9	21	2	1		7	44
−0.5– 0.0	1			40	1	1		3	46
−1.0–−0.5	1			19	2			1	23
−1.5–−1.0	2		2	18	3			1	26
−2.0–−1.5	1			7					8
−2.5–−2.0					4				4
Total	10	1	35	124	15	7	3	17	212

to individuals in all Groups and at all Levels, or even in a number of these. It is much more usual to find reports on scattered occupations at one or two Levels or in one or two Groups. Different workers apply different techniques, different sampling methods, and different criteria, and this makes it difficult to relate results from one study to those from another.

DIFFERENCES BETWEEN GROUPS

Intelligence

Intelligence, as measured by such tests as the Army General Classification Test, is not clearly related to Groups, at least for the lower Levels. The Army data available are for enlisted men, and therefore contain very little information about individuals at the upper Levels.

TABLE 12.2. INTELLIGENCE TEST RESULTS FOR

			Groups
Study by	I	III	IV
Wolfle and Oxtoby AGCT percentile: about 10,000 undergraduates in 40 colleges; about 4,500 graduate students	Social work—; 126[a]	Business and commerce 124; 126	Engineering 129; 131
Averages	—; 126	124; 126	129; 131
Schultz and Angoff Graduate Record Examination Verbal (V) and Nonverbal (Q) Scores			Engineering, *N* 151 V 454; Q 570
Unweighted averages			V 454; Q 570

[a] The first figure is the undergraduate 50 percentile, the second the graduate.

There are some indications that intellectual level, or at least the patterning of intellectual abilities, does differ from Group to Group.

Stewart analyzed AGCT medians for different occupational groups for 88,907 white enlisted men. She divided the range into 10 steps, each step consisting of one-half standard deviation, and listed each occupation in the step in which its median score fell. Each of these occupations has been classified into Groups, and the distributions are shown in Table 12.1 an page 153. The totals for each Group are some indication of the numbers of white males of enlisted status who had been working in each Group. The sample is of course sharply curtailed at the upper levels. As was noted also in Table 11.3, Group VII is short in occupations in the lower Levels. Group II occupations which are relatively few in number are not represented here at all.

Schultz and Rush studied the population of a tuberculosis sanitarium which they consider a good sample of the general population; educa-

College Students Classified by Major Field

V	VI		VII		VIII	
Agriculture 124; 132	Chemistry	130; 134	Economics	127; 130	Fine arts	126; 126
	Physical science	132; 136	History	125; 129	Physical education	117; 120
	Earth science	126; 129	Social science	123; 129		
	Biology	126; 131	Home economics	118; 121		
	Psychology	128; 137	English	128; 134		
	Medicine	—; 132	Languages	128; 131		
	Dentistry	—; 126	Philosophy, other	123; 135		
	Nursing	125; —	Education	123; 127		
	Other health	—; 131	Law	125; 129		
124; 132		128; 132		124; 129		121; 124

	Chemistry, *N* 180 V 507; Q 562	Economics, *N* 239 V 476; Q 516	
	Geology, *N* 85 V 473; Q 500	Education, *N* 180 V 438; Q 434	
	Mathematics, *N* 81 V 508; Q 587	French, *N* 32 V 520; Q 453	
	Physics, *N* 49 V 531; Q 633	German, *N* 10 V 543; Q 495	
	Biology, *N* 209 V 486; Q 499	Government, *N* 146 V 498; Q 485	
	Psychology, *N* 171 V 527; Q 495	History, *N* 181 V 517; Q 468	
		Literature, *N* 239 V 564; Q 463	
		Philosophy, *N* 81 V 563; Q 521	
		Sociology, *N* 127 V 529; Q 451	
		Spanish, *N* 34 V 529; Q 451	
	V 505; Q 546	V 511; Q 445	

tional level ranged from 0 to 16 years. Using Barr ratings, Kuder Preference, and the Pressey Classification and Verification Tests, they concluded that there is very little relation between occupational interests and intelligence.

Some indication of the relative positions of occupations in upper Levels of the different Groups can be gained from studies of college students. Data from two studies are presented in Table 12.2. The Wolfle and Oxtoby study contains data for both graduate and undergraduate students, and it can be seen that their relative positions are about the same. Students in Groups IV, V, and VI have the highest ratings, but differences between them and those in Group VII are very slight. Groups I and II come next, followed by VIII. That occupations for which the primary focus is physical or artistic activity are less exacting with regard to intellectual status as measured by tests is not surprising.

The data reported by Schultz and Angoff for college seniors, also in Table 12.2, offer additional information. Of particular note are the differences in patterns. Engineering and all the Group VI samples except psychology have higher scores in the quantitative than in the verbal test; the reverse is true for all but the Economics sample in Group VII. In studies of eminent scientists, similar differences in test intelligence and patterning appeared.

Bryan and Perl compared women students in art, music, and teacher training institutions on intelligence tests, rote memory, motor speed, and the Bernreuter. They found very few significant differences. Art students were superior in spatial analogies and memory for objects; music students were superior in motor speed tests and memory for words, and the teachers' college students were superior in ACE scores and showed less neuroticism on the Bernreuter than the others.

There are no useful data on education which can be arranged to show Group differences.

Personality

Since this categorization is largely based upon factorizations of interests, which in turn have been usually based upon occupational differentiation, it is clear that occupations will show differences which are related to their Group category. On the other hand very little has been done with interests and occupations at the lower Levels.

The data on the Allport-Vernon Study of Values, given in Table 7.11, have been recast in Table 12.3 to show the relationships with these occupational Groups more clearly. This table does not distinguish between the populations used in different studies, but they are all

TABLE 12.3. PERSONALITY STUDY RESULTS ARRANGED BY OCCUPATIONAL GROUPS

	Groups							
	I	II	III	IV	V	VI	VII	VIII
A-V Study of Values (data from Table 7.11) A, aesthetic R, religious E, economic P, political S, social T, theoretical	Social welfare occupations: A −; R+; E −; P −; S+; T − YWCA secretaries: P −	Life insurance salesmen: E+; P+	Banker: R −; E+ Finance occupations: A −; E+; T+ Business: A −; E+; T − Selling specialties: A −; E+ Office workers: A −; E+; P+; T −; T+ Stenographers: A −; E+; P+; T −; T+	Skilled mechanics: A −; E+; T+		Physical scientists: A −; T+ Biological scientists: A −; T+ Nurses: A −; S+ Doctors: E −; P −; T+ Dentists: E −	Teachers: A+; R+; E − Mathematics-science teachers: A −; P − Lawyers: A −; R −; E+; P+; S+; T − Social science students: A −; R+; E −; P − English teachers: A+; P −; T+	Authors: A+; R+; E −; P −; S+ Artists: E −; P −; S − Performers: A+; E −; P+; S+ Health, Physical education students: A −; P+; R+; E −
Daniels and Hunter, MMPI, 4 Scales: Mf; Pd; Sc; Ma (Mean scores, 893 veterans, males, average age 23; number of cases in parentheses)	Social workers (4): 60; 53; 47; 55 Barbers; (4): 65; 55; 52; 57	Insurance salesmen (10): 57; 63; 51; 62	Draftsmen (13): 59; 57; 56; 57 Accountants (13): 61; 55; 58; 50 Managers (6): 52; 50; 52, 55 Typists (3): 58; 62; 45; 58 Clerks, general (14): 53; 54; 49; 56	Auto mechanics (33): 52; 62; 52; 61 Auto body repairmen (19): 55; 53; 49; 60 Electrical repairmen (7): 52; 58; 52; 49 Auto upholstery workers (6): 57; 63; 55; 53 Electricians (10): 53; 56; 52; 53	Farmers, livestock (5): 47; 57; 55; 55 Farmers, general (15): 49; 58; 52; 56	Physicians (5): 69; 65; 55; 69 Chemists (7): 65; 56; 52; 57 Medical technicians (8): 55; 63; 48; 56	Social scientists (5): 75; 63; 51; 69 Authors, editors, reporters (10): 67; 70; 56; 67 Lawyers (13): 64; 61; 54; 64 Radio announcers (4): 60; 62; 57; 68 Kindergarten teachers (5): 57; 63; 55; 63	Commercial artists (9): 51; 65; 47; 58 Athletic coaches (10): 53; 66; 44; 55 Dance instructors (10): 62; 59; 56; 62

college students, grouped by major field. The occupational groupings are, therefore, somewhat uncertain. Entries indicate only scores that were significantly different from the average. Note that high Aesthetic values occur only in Groups VII and VIII, and negative ones in all the other Groups. Religious values are high for Groups I, VII, and VIII and generally absent in the others. Economic values are high for Groups II, III, and IV and low in the others (except for lawyers in VII). Political values are high in II and III, low in I and VI, and not consistent in VII and VIII. Social and theoretical ratings are inconsistent in different studies.

Daniels and Hunter reported mean T-scores on four scales of the MMPI for 893 male veterans. These data are also assembled in Table 12.3, but no distinct patterns appear. Lough studied women students in different curricula, liberal arts, nursing, music and teacher training, with the MMPI. She found no statistically significant differences between these groups on any of the scales.

Mosier and Kuder, using the Kuder Preference Record, compared 577 male subjects in 20 occupational groups, mostly in Groups III and IV, with 450 unselected males in five attitudes:

1. Taking the lead in activities.
2. Dealing with practical problems, rather than imaginary or glamorous ones.
3. Thinking and speculating.
4. Relations free from conflict.
5. Activities involving authority and power.

The major differences are shown in Table 12.4, entered as above (+) or below (—) the mean of the unselected group. No regular relationships are suggested.

A study by Marzolf of 279 freshmen students at a normal school, grouped by major field of study, showed only a few differences from other freshmen of statistical significance on the Kuder. Business education majors ($n = 55$) were higher in Clerical and Computational interests; elementary teachers ($n = 45$) were lower in Literary interests; and home economics majors ($n = 41$) were higher in Social service interests, compared with "all other freshmen."

In Table 12.5, pages 160–161, scores for various occupational groups on the Masculinity-Femininity scale of the Strong are entered by Group and Level Unweighted averages for each Group indicate that there are some differences although in most Groups the number of entries is too

TABLE 12.4. DIFFERENCES IN CERTAIN ATTITUDES BY LEVEL AND GROUP (DATA OF MOSIER AND KUDER)[a]

	Groups				
Level	I	II	III	IV	VII
1	Personnel, counseling: 1+; 3+; 5+				Lawyers: 5+
2				Chemical engineers: 2+ Mechanical engineers 4+ Plant managers[b]	Teachers: 4+
3		Insurance sales: 1+; 4+	Accountants[b] Business managers: 3+, 5+ Retail managers[b] Sales managers: 1+; 2−; 5+ Office managers: 1−; 4+ Sales specialties: 1+; 2− Tellers: 1−; 3+		
4			Account clerks: 1−; 3+ Office clerks Salesmen	Foremen: 1+ Electricians[b] Carpenters: 1−; 3−	
5				Telephone linemen: 1−	
6				Factory workers: 5−	

[a] Personal preference record (major differences from unselected group in):
1. Taking the lead.
2. Practical.
3. Thinking.
4. Conflict-free.
5. Activities involving authority.

[b] No numerical entry after an occupation means that this occupation was included but no differences were found.

small for any confidence. On these data Group IV occupations have the highest scores for masculinity. Group VII is the lowest, with II and VIII not much higher. The relationship with Level is fairly close. This is in accord with general stereotypes of persons working in these occupations. Occupations high in verbal, social, and aesthetic ratings tend to be low in masculinity scores. Occupations high in numerical, spatial, physical, and leadership ratings tend to be high in masculinity scores.

There have been a number of Rorschach studies of different occupational groups. These have been mostly of professional persons, and for various reasons the data are not very satisfactory. For one thing, many of the groups are extremely small. For another, often

TABLE 12.5. MEAN SCORES ON STRONG MASCULINITY-FEMININITY TEST

Groups

Level	I	II	III	IV
1				
2			Certified public accountants 46.4 Bankers 49.2	Physicists 55.7 Engineers 61.9 Chemists 57.1
3	YMCA secretaries 40.0 YMCA physical directors 47.1	Real estate salesmen 47.3 Life insurance salesmen 42.4	Accountants 50.1 Purchasing agents 55.6 Sales managers 51.8 Personnel managers 50.7	Production managers 59.1 Aviators 58.2
4	Policemen 51.2		Office workers 52.0	Printers 47.3 Carpenters 58.6
Unweighted averages	46.1	44.9	50.8	56.8

nothing but averages of determinants is reported. Brief technical summaries are given in Table 12.6. The individual studies will be discussed in later chapters. Here it may be said that physical science and engineering groups tend to disinterest in or withdrawal from other persons and show somewhat compulsive, rigid, and anxious personality pictures. (Theoretical physicists may be exceptions.) Biologists are also somewhat restricted and nonsocial, with marked emphasis on rational controls. Psychologists are generally rather disinterested in intellectual controls and greatly interested in people, and anthropologists resemble them in these respects. Artists are a very heterogeneous group, and different studies seem to agree only that they have some tendency to abstract thinking. This is true of the other groups mentioned, and is rather a matter of Level than of Group. More studies of other occupational groups, and with large samples, are needed to clarify these relationships.

In summary we may say that the different Groups show differences in personality pictures, so far as these have been studied, which are in accord with the basis of interests on which they are largely separated. There are probably differences in intellectual *patterning* which accompany these personality differences; differences in intellectual *level* are less marked, although Groups I and V tend to be lower than the others.

FOR OCCUPATIONS CLASSIFIED BY GROUP AND LEVEL (DATA FROM STRONG)

V	VI	VII	VIII	Unweighted Averages
	Mathematicians 46.4 Physicians 47.9	Ministers 35.1 Lawyers 47.1	Artists 33.0 Musicians 40.6	41.6
	Dentists 53.2	Authors, journalists 31.8 City school superintendents 44.6 Social science teachers H.S. 42.9 Mathematics-science teachers H.S. 50.3	Architects 43.8	48.8
Farmers 51.2 Forest servicemen 52.2			Advertising men 39.0	49.6
				52.3
51.7	49.1	41.9	44.1	

TABLE 12.6. SUMMARIES OF RORSCHACH STUDIES BY OCCUPATIONAL GROUPS

Groups	Authors	Subjects	Results
I	Harrower and Cox	8 social workers	(W) D (M) (FM) F (FC)
II	Harrower and Cox	11 insurance salesmen	W (M) (FM) F
IV	Harrower and Cox	13 metallurgists	(W) D M FM (F) FC
	Harrower and Cox	19 engineers	W (M) (FM) (F) ((Fc)) FC
	Steiner	engineers	D (M) F ((FC))
VI	Roe	65 physicists	W Dd S F c K ((M)) m (FC)
	Roe	186 biologists	W Dd F ((M))
	Roe	18 paleontologists	W F ((M)) (FC) ((CF))
	Roe	104 psychologists	M FC (F)
VII	Harrower and Cox	11 clergymen	W (M) (FM) (F) FC
	Roe	25 anthropologists	W M
VIII	Harrower and Cox	6 organists	W = D; (M) (FM) (F) FC
	Harrower and Cox	15 commercial artists	W F FM (F) FC (CF)
	Steiner	10 artists	W Dd M Fc
	Steiner	18 ad copywriters	W M
	Prados	20 artists	W (D) M FC
	Roe	20 artists	W ((D))

DIFFERENCES BETWEEN LEVELS

Intelligence

Stewart's data have been rearranged, this time by Levels, and are shown in Table 12.7. It is evident that test scores decrease from Levels 3 down to 6. Entries above that are too few in number to show a clear pattern. Again the very great overlapping can be noted. At every Level there are persons with higher intelligence than the mean of higher Levels.

TABLE 12.7. DISTRIBUTION OF AGCT SCORES OF OCCUPATIONS CLASSIFIED BY LEVELS (DATA FROM STEWART)

Standard Deviations from the Mean	Levels						
	1	2	3	4	5	6	Total
+2.0–+2.5		1	1	1			3
+1.5–+2.0	2	1	1	1			5
+1.0–+1.5	1	1	4	10	4		20
+0.5–+1.0		5	5	14	9		33
0.0–+0.5		2	2	23	15	2	44
−0.5– 0.0		2	3	22	17	2	46
−1.0––0.5				11	11	1	23
−1.5––1.0				8	13	5	26
−2.0––1.5				2	1	5	8
−2.5––2.0				1	1	2	4
Total	3	12	16	93	71	17	212

Table 12.8 gives other data, also derived from Army enlisted men. The sample used by Harrell and Harrell included 18,782 men and 74 occupations (fewer than those in Stewart's sample), but the data are given in terms of means and can be arranged to show the relationships between Levels and Groups somewhat more clearly. Again Groups I and V are consistently lower than the others at the same Levels, and within Groups there is a consistent decrease in means from higher to lower Levels. (See pages 164–165.)

There are few data on intelligence for upper Levels. For Level 1 there are the data for the various groups of scientists that I studied. The verbal-spatial-mathematical test can be expressed approximately in terms of IQ for comparative purposes. On this, the group averaged about 165 IQ on the verbal test, about 135 on the spatial, and about 155 on the mathematical. Ranges began at about 125 IQ and went up. My impression of the group of creative artists whom I studied (I did not use an intelligence test) was that they were generally somewhat above average in intelligence but nowhere near the level of the scientists. Table 6.1 gave some data for teachers and other professional groups.

Education

In general, educational requirements vary with Level, but although the over-all picture is one of decreasing requirements from higher to lower Levels there are exceptions.

Level 1 occupations are somewhat anomalous. With increasingly rare exceptions, the research scientist is a man with much formal education (normally with a doctorate). This is also true of scholars, justices, and of most high government officials, who usually have been professional men. Anderson reports that our Presidents, Vice-Presidents, and Cabinet officers since 1789 have been consistently far above the average educational levels of the population at large. Almost all were trained in professions or as proprietors, and about 75 per cent had fathers similarly trained. The industrial tycoon, however, is most unlikely to have an earned doctorate, nor have our prophets generally been formally educated men. In the arts, too, a high level of formal education is relatively rare among the creators. Specialized, somewhat formal schooling of any length is more likely among the musicians than among the painters, although the latter have usually had some art school training. Of the 20 painters I studied, only 3 had had other schooling beyond high school. More writers have had advanced education, but it is by no means a prerequisite for success.

Formal educational requirements are much stricter for scientific and teaching professions. There are still a few states which will accept teachers without college training, but even they require some normal school training. At the college level of teaching, the doctorate is usually expected above the grade of instructor, in the larger colleges and universities. There is a general tendency for an increase both in the amount of formal education, and in its requirement for entrance into professional and semi-professional occupations.

The entrepreneur type of occupation at Level 3 and a few occupations in Level 2, such as those of designers, music arrangers, etc., do not require formal education of definitely specified sorts, and are frequently still pursued by persons with very little.

From Levels 4 to 6 educational requirements generally decrease. At Level 6, in fact, formal education would hardly contribute to occupational performance, but, since literacy is supposedly a universal requirement in our culture and this requirement is being increasingly met, even in this level some degree of formal education is the rule.

TABLE 12.8. AGCT SCORES FOR CIVILIAN OCCUPATIONS, BY GROUPS AND LEVELS. NUMBER OF SUBJECTS AND MEAN SCORE (DATA OF HARRELL AND HARRELL)

Level	Groups							
	I	II	III	IV	V	VI	VII	VIII
1							Lawyer 94 127.6	Artist 48 114.9 Musician 157 110.9 (Average 112.9)
2		Public relations 42 126.0					Teacher 256 112.8	
3			Accountant 172 128.1 Auditor 62 125.9 Chief clerk 165 124.2 Draftsman 153 122.0 Sales manager 42 119.0 Purchasing agent 98 118.7 Manager 234 116.0 Manager, retail 420 114.0 (Average 120.9)	Foreman 298 109.8		Pharmacist 58 120.5	Reporter 45 124.5	
4	Bartender 98 102.2 Barber 103 95.3 (Average 98.9)		Stenographer 147 121.0 Tabulating machine operator 140 120.1 Bookkeeper 272 120.1 Clerk 496 117.5 Clerk-typist 468 117.3 Cashier 111 115.8 Sales 494 115.1 Inspector 358 112.3 Receiving and shipping clerk 468 109.2 Sales clerk 492 109.2	Installer 96 115.8 Instrument repairman 47 115.5 Radio repairman 267 115.3 Printer 132 115.1 Toolmaker 60 112.5 Watchmaker 56 109.8 Airplane mechanic 234 109.3 Electrician 289 109.0 Mechanic 421 106.3 Cabinet maker 48 103.5	Farmer 700 92.7	Laboratory assistant 128 113.4		Photographer 95 117.6

Level	Groups							
	I	II	III	IV	V	VI	VII	VIII
4 (Continued)			(Average 115.9)	Riveter 239 104.1 Upholsterer 59 103.3 Carpenter 451 102.1 Plumber 128 102.7 Auto mechanic 486 101.1 Painter 440 98.3 Craneman 99 97.9 (Average 107.1)				
5	Chauffeur 194 100.8 Cook and baker 436 97.2 (Average 99.0)		Stock clerk 490 111.8 Checker 281 107.6 (Average 109.7)	Machinist 456 110.1 Sheet metal worker 498 107.5 Lineman 77 107.1 Assembler 498 106.3 Machine operator 486 104.8 Auto serviceman 539 104.2 Butcher 259 102.9 Pipefitter 72 101.9 Welder 493 101.8 Molder 79 101.1 Truck driver 817 96.2 (Average 104.0)	Tractor driver 354 99.5			
6				Lathe operator 172 108.5 Weaver 56 97.0 (Average 102.8)	Laborer 856 95.8 Lumberjack 59 94.7 Farm hand 817 94.1 Teamster 77 87.7 (Average 92.4)			

Reynolds has reported on employer preferences in the education of their employees. He interviewed several hundred employers in every type of industry. For executive administrative positions more than half the employers said that they preferred college-trained men, and the remainder preferred high school graduation or better. For routine clerical workers, more than 90 per cent preferred high school graduation and 50 per cent required it. For skilled maintenance workers 45 per cent of the employers wanted high school graduates, and they also had a marked preference for persons with previous vocational training. The preference for high school graduates dropped to one-third for production workers with the rest wanting eighth grade or better. For common labor the great majority of employers expressed no preference; those who did preferred that laborers not have more than eighth-grade education.

It should be kept in mind that higher education can be a detriment in particular situations, even if a help in most. The person with an education higher than the bulk of those in his occupational group, and with very limited possibilities for change or advancement, may well find less satisfaction in his work than the others do. If his having the higher education is a reflection of an originally greater level of aspiration it is almost certain that his satisfaction will be lower. It may be, also, that the education itself has opened wider vistas which his circumstances do not permit him to explore, but the knowledge that they are there can well be frustrating. Myers has pointed out that even for the scientific worker in a routine job too high intelligence or creative ability are liabilities rather than assets.

Personality

The only personality test material reported in the previous section that can be analyzed by Level are the data on the Strong Masculinity-Femininity Scale, given by both Group and Level in Table 12.5. As the unweighted averages show, there is a generally increasing score from Levels 1 through 4 (there are no data for the other Levels). Although so few occupations are represented this pattern is not unexpected.

There are undoubtedly major differences in motivational factors which enter into the Level at which any person eventually arrives. Those who work at Level 1, for example, at least in the upper brackets of this Level, are people who are strongly driven, for whom absorption in the work, to the near exclusion of all else, is the rule. There may be any number of situations which can bring this about, but it is apparent that the possession of superior intelligence and a favorable social climate are by no means enough. That the same situation holds at other Levels is clear from the great overlapping of test scores. Some differences are attributable to original socioeconomic background, as has been discussed, and some to the education that had been available, but with sufficient motivation both of these have been overcome when they have been unfavorable.

It appears to be the case that the sort of motivation that has acted as a spur to accomplishment has often been neurotically based, but it need not be. Although the evidence has never been systematically gathered it is theoretically probable that those who are freed for creative work through lower need gratification can produce more effectively and with infinitely greater end-satisfactions themselves than those whose creativity is in spite of, or perhaps partly marshalled by, a hunt for substitute gratifications. (Maslow, Kubie, Roe, 1953.) Maslow believes that the creative* productions of need-gratified persons can be distinguished from those of others, and personal observations accord with this.

In summary, the primary basis for categorization into Levels was the degree of responsibility and autonomy. In addition, skills and training have been taken into account, but responsibility is the primary criterion. Naturally, then, those studies which have taken account of this factor, and few have done so except as a side issue, show increasing dislike for regimentation and supervision as we go up the scale of Levels.

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* We have been using creativity here in the usual sense of creative behavior that results in productions useful to society. In fact, the usefulness or nonusefulness of the result has no bearing on the creative process.

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CHAPTER 13

Group I Occupations: Service

THE OCCUPATIONS in this Group are those which are focused on catering to the personal tastes, needs, and welfare of others. At the upper Levels particularly, an important element is the primary nature of the personal relationship and its specific quality. These occupations always involve one person doing something for or to another person, or persons, although the services may be minor ones. All guidance, social, and welfare occupations belong here, and so do occupations usually listed as domestic and protective services. The commonest occupations are listed in Table 13.1 on page 170.

A few comments on occupations listed in the table are in order. Level 1 includes psychotherapists and other personal therapists, as well as administrative heads of welfare services of various sorts. Psychotherapy is included here rather than with the medical therapies because its essence is the personal relationship between therapist and patient or client, although it has, of course, close relationships with medical therapies. General religious workers are put in this Group, at Level 4, instead of in Group VII because this designation is taken to mean the relatively untrained, well-meaning person who is more a social worker than a cleric, more interested in people than in theology.

Occupations in this Group may require less test intelligence than occupations in most other Groups at corresponding Levels; verbal fluency is high in some at upper Levels. They tend to give ratings on M-F scales at the feminine end.

Harrell and Harrell reported AGCT mean scores of 102.2 for bartender; 100.8 for chauffeur; 97.2 for cook and baker; and 95.3 for barber. Stewart's data give AGCT scores for 10 occupations in this Group as follows:

−2.0 to −1.5 S.D.	barber
−1.5 to −1.0 S.D.	hospital orderly

	cook
−1.0 to −0.5 S.D.	chauffeur
−0.5 S.D. to mean	firefighter
mean to +0.5 S.D.	practical nurse
	steward
	cook's helper
	policeman
+1.0 to +1.5 S.D.	investigator

TABLE 13.1. OCCUPATIONS IN GROUP I: SERVICE

Level 1

Personal therapists
Social work supervisors

Level 2

FBI agents
Probation, truant officers (with special training)
Occupational therapists
Social workers
Vocational, educational counselors

Level 3

Armed forces, rank equivalent to sergeant
Astrologists
City inspectors
Conductors, railroad
Detectives
Employment interviewers
Police sergeants
Sheriffs
Welfare workers, municipal
YMCA, YWCA officials

Level 4

Barbers
Bartenders
Chefs
Conductors, street car
Hairdressers
Headwaiters
Lifeguards
Light housekeepers
Practical nurses
Policemen
Religious workers
State policemen
Stewards

Level 5

Bellhops
Chauffeurs
Cooks, average
Firemen, city
General houseworkers
Janitors
Palm-readers
Privates, armed forces
Prison guards
Psychiatric attendants
Servants, household
Taxi drivers
Train porters
Ushers
Waiters

Level 6

Bootblacks
Chambermaids
Charwomen
Elevator operators
Garbage collectors
Hospital attendants
Street sweepers
Watchmen

LEVEL 1

Clinical psychologists

Not all clinical or counseling psychologists do therapy, but all of them are concerned primarily with the individual as an individual, and even diagnosis has supportive aims. A few industrial psychologists belong in this Group; others seem to fit better in III or VI.

Baas studied Kuder interest patterns of experienced psychologists, finding all of them high in the Science and Literary scales, and generally low on Mechanical, Persuasive, and Clerical scales. There were some differences among different groups of psychologists: industrial and counseling psychologists were higher than others on Persuasive; theoretical and industrial, higher than counseling on Mechanical; and industrial, higher than the clinical on Clerical interests.

A Group Rorschach study included 33 clinical psychologists working in universities, most of whom were doing both teaching and clinical work (Roe, 1952). The most striking aspect of the results was the large difference between all psychologists and the other scientists in the use of human movement responses (M) and in the irregularity of approach (Suc). Psychologists in general, and clinical psychologists to an even greater degree, used many more human movement responses than the other groups. This seemed to reflect the fact, shown also in individual studies of psychologists (Roe, 1953), that those who enter this field are from childhood very much more concerned with other persons than are those who go into such fields as physics and biology. That personal relations loom so large in their lives may well have affected the theories of personality development now current.

A very extensive and intensive study, reported by Kelly and Fiske, was made of clinical psychology trainees in the Veterans Administration program. A group of non-VA, nonclinical graduate students in psychology were compared on a variety of tests and other data with VA trainees in clinical psychology. The clinical group showed a Strong interest pattern more like that of men in professions involving contact with people, such as social welfare, than the nonclinical group, which was more like professional groups concerned with things and ideas rather than with people, although the overlap was large. The two groups were very similar on all other test scores, and, combined, differed markedly from normative groups. The Strong gave better predictions than any of the other tests. The clinicians had a median score at the seventy-first percentile of general norms on the Miller Analogies. Their Primary Mental Abilities percentile medians were approximately:

Number	95	Word fluency	85
Verbal	91	Reasoning	81
Space	53	Memory	73

The nonclinicians had similar scores but were higher on Space and lower on Number. On the A-V scale the combined group had relatively high scores on Theoretical, Aesthetic, and Social values, and relatively low scores on Economic, Political, and Religious values. The clinical group scored even higher than the nonclinical on Social values.

On the Guilford-Martin both clinical and nonclinical groups were much more socially extroverted, much freer from depressive and cycloid tendencies, slightly more compulsive, much less physically active, more ascendant and more masculine than the normative population. The clinical group was somewhat more extreme than the nonclinical in all of these, except masculinity, but again the overlap was almost complete.

On the MMPI the total group deviated from the normal population in being less hypochondriacal, slightly more subject to depression, far more hysterical, extremely feminine, much less pychasthenic, and less schizoid. Again the overlap is enormous, but the clinicians tended toward the better-adjusted scores each time. It must be remembered that they are more sophisticated in tests, and also had considerably higher K scores, indicating somewhat more tendency to give the right answer knowingly.

Discrepancies between the Guilford-Martin and MMPI are moderate with regard to depressive tendencies and extreme in masculinity-femininity, the former rating the group as masculine and the latter as very feminine. This points up one of the problems in labeling tests, and is a discrepancy between these two tests which has been noted in other connections. (The Terman and Strong M-F scales are also discrepant on occasion.) On the Strong M-F scale psychologists are about at the mean. Results in personal studies would suggest a possible reason for this discrepancy: Compared to other groups they are relatively free in heterosexual activities, and they have strong scientific interests both of which are on the masculine side; on the other hand they have many characteristics which are usually considered in our culture rather more feminine: their interest in people, and their strong verbalizing tendencies.

In a later report, Kelly and Fiske (1950) summed up as follows:

> . . . our findings suggest that, in selection for professional training, more attention might well be given to the role of motivation. Perhaps at the level of graduate training, we need establish only a minimal cutting score on tests of intellectual aptitudes; beyond that point, the strength of motivation and the absence of conflicting drives may be the determining factors in success in professional training, and even in the conduct of professional duties.

This would seem to be true for all upper Level occupations. It should however, be added that not only the strength of motivation but the nature of it is important. We have as yet no standardized or even reasonably good *ad hoc* techniques for determining this major factor.

LEVEL 2

Vocational counselors

Vocational counselors have much in common with clinical psychologists in training as well as in actual work. Although the doctorate has been less common among them than for clinical psychologists, this is changing; as the field becomes more professionalized the general Level of the occupation will be raised. There are still many, however, with little specialized training.

A study by DiMichael of 146 male vocational rehabilitation counselors used the Kuder Preference Record, a work satisfaction survey sheet and a supervisor's rating score for work efficiency. In general, intercorrelations were low, but there were a few which showed a significant relation between specific aspects of the counselor's job in terms of satisfaction and efficiency, and particular Kuder scores:

Promotional work and persuasive interest scores, $r = +.32$
Professional reading and scientific interest scores, $r = +.26$
Employer contacts and persuasive interest scores, $r = +.19$

Gunderson found male counselors less masculine than the general average for males, and female counselors less feminine than the general average for females. This relationship probably exists for most professional groups with the possible exception of male physical scientists. The Strong M-F scores also tended to the feminine side at the higher Levels, and these were all for male groups (Table 12.5).

Social work

There have been some discussions of the sort of person who goes into social work, but very few studies have been made. There are more women than men in the occupation, although the number of men appears to be increasing. Educational requirements for the occupation are increasing, and many social workers are now functioning at Level 1. Carter has made an unsuccessful attempt to construct a test for social work ability.

Lewis compared 50 women social workers with the norm groups on the Kuder Preference Record, and the MMPI. He found social workers to be significantly high on the Depression and Hysteria scales; significantly low for Masculinity, Hypochondriasis, Psychasthenia, and Schizophrenia. It is, of course, possible that their low scores in these scales reflect their unusual sophistication in psychopathology. Those whose interests, as measured by the Kuder, seemed less appropriate to their work were on the whole less well adjusted.

Piotrowski used a group of 8 men and 10 women social work students for a comparative study of the Rorschach and the Kuder. They were all of superior intelligence. Those who were studying social work because they wished to rather than for other reasons (outside pressures, marriage to a social worker) had qualitatively and quantitatively different pictures on the Rorschach, showing particularly greater interest in persons.

The study of 8 social workers by Harrower and Cox (see Table 12.6), on the contrary, showed them low in human movement responses on the Rorschach, an unexpected finding. In general these 8 workers seemed to have practically oriented, somewhat restricted personalities. No information on the selection of the group is given.

Social welfare workers have been reported as low in Aesthetic, Economic, Political, and Theoretical, and high in Religious and Social values on the A-V Study of Values (Table 12.3).

Occupational therapy

The only study of this group is one by Schmidt which compares women students in occupational therapy with students of nursing. The occupational therapy group had somewhat higher intelligence and greater abstracting capacity than the nursing students. Other differences showed them also higher in human movement responses and in the total of color and shading responses on the Rorschach, i.e., more interested in people and more outgoing.

LEVEL 4*

Policemen

Dubois and Watson studied two entering classes at the St. Louis Police Academy. They used a large battery of tests (AGCT, Bennett, etc.). From these they could get a fairly good prediction of academic achievement at the academy and of score on a test of knowledge of police practice, but none of the tests or combinations of them had a significant correlation with rating on the job by supervisors. This is another instance of the necessity for on-the-job criteria as opposed to training criteria.

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* There are no studies of occupations in Level 3 of this Group. The same applies to Levels omitted in subsequent chapters.

Mata, in a study in the Argentine, concluded that objective measures of emotional stability are necessary adjuncts to any battery for the selection of police officers. He makes the intriguing suggestion that an index of imperturbability could be obtained by measuring the physiological changes accompanying emotions.

Humm and Humm, with a more clinical approach, had somewhat more decisive results than those reported by DuBois and Watson, but the study is one which it would be rather difficult to cross-validate from the published report. They used the Humm-Wadsworth Temperament Scale which was administered during the probationary period. They then predicted success or failure (that is, the attainment of staff membership or dismissal for cause). Their predictions were made after consideration of each profile to determine what components would dominate the behavior of the subject, whether they were adequately controlled, and whether the pattern was or was not desirable for police work. Predictions were recorded in 6 categories, from very good to poor, and they got an average correlation of +.72.

Hammond studied policewomen who had had college training. He found that there was a relationship between the score on the civil service examination and college grades, as well as with a standard intelligence test. He did not follow up the study with on-the-job ratings, so that it is not known whether such data are significant for actual job performance or not.

Firemen

Wolff and North studied 144 fire department privates. They selected extreme groups on the basis of ratings made by captains, and administered the Bennett Mechanical Comprehension and the written examination for apprentice firemen. The higher ranking group excelled in both of these at the 2 per cent level of confidence.

LEVEL 5

Psychiatric attendants and attendant-applicants

This is a fluctuating group with a generally very high yearly turnover. Kline studied 108 employees at a VA hospital, using a Personal Inventory and analyzing their pre-employment records two years after they went on the job. He reports that 83 per cent (29) of the unsatisfactory attendants could have been weeded out in advance. The satisfactory aide tends to be single, under 40, from a small town, the parents not separated or divorced, and the mother not working. He is in good health and, if he has married, is still married. He took the job for experience or for economic reasons. On the other hand, the unsatisfactory aide is likely to have been married but to be now divorced or separated. His parents are also likely to have been separated or divorced and to be disappointed in him. His health is average and his reason for taking the job is a desire for security. These distinctions could probably apply equally well to other occupational groups at this Level. One would judge that the satisfactory aide is a man with a reasonable amount of need gratification during his earlier years and with a realistic attitude. One would expect that he was not likely to stay on the job long, and would leave for something better, although he would do well while he remained. The unsatisfactory person in this study sounds like the general misfit, who takes such a job as this because it is available and not because of any interest in it, or of any interest in doing any job well. He is probably drifting, looking vainly for satisfaction never yet achieved.

The paucity of studies of occupations in this Group is very striking, even though it is one of the smaller Groups in terms of total numbers of occupations and of persons. The many studies of Armed Forces personnel made for various purposes during World War II have not been included for obvious reasons. Similar studies of peace time, non-drafted personnel would be relevant but are not available.

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CHAPTER 14

Group II Occupations: Business Contact

THERE ARE very few occupations represented in this Group, and they are listed in Table 14.1. The salesmen and dealers included are those whose main problems consist in persuading prospective clients in a direct person-to-person relationship. This is very different from over-the-counter selling. Some traveling salesmen belong in this Group and some in Group III. It depends upon whether the taking of orders is simply a routine, clerical job, or whether persuasive selling is involved.

TABLE 14.1. OCCUPATIONS IN GROUP II: BUSINESS CONTACT

Level 1

Promoters

Level 2

Promoters
Public relations counselors

Level 3

Retail and wholesale dealers
Salesmen: auto, bond, insurance, real estate
Confidence men

Level 4

Auctioneers
Buyers (DOT I)
House canvassers and agents
Interviewers, polls

Level 5

Peddlers

In general, Group II occupations differ from Group I occupations because of the character of the interpersonal relationship, which is essentially supportive in I and exploitative in II. They differ from Group III occupations because of the closer person-to-person contacts involved.

There are no data on occupations at Levels 1 and 2.

LEVEL 3

Life insurance salesmen

There have been a number of studies of life insurance salesmen, and the samples are unusually large. Apparently this occupation is one in which even moderate success is quite dependent upon real liking for the occupation, perhaps even more than holds true for many other occupations. Strong has reviewed a number of studies demonstrating relations between scores on his test and life insurance sales. These have been combined by Super into a table, which is reproduced as Table 14.2. There is a clear tendency for the men who made high scores on the Strong to have sold the most insurance. Correlation for 181 subjects is +.37. The correlation would probably have been higher had not most of the low-selling men been eliminated from the occupation.

TABLE 14.2. PERCENTAGE OF AGENTS IN EACH LIFE INSURANCE INTEREST RATING (ON THE STRONG) WHO PRODUCE $0 TO $400,000 AND UP ANNUALLY (FROM SUPER)

		Percentage in Each Rating Producing				
Annual Production, $	*N*	C	B−	B	B+	A
0 to 49,000	38	52	33	27	22	9
50,000 to 99,000	52	24	17	45	34	16
100,000 to 149,000	31	18	17	14	7	19
150,000 to 199,000	37	6	17	9	13	22
200,000 to 399,000	47	0	17	0	20	31
400,000 and up	6	0	0	5	4	3
Total		100	101	100	100	100
Number	211	17	6	22	45	121

Bills studied casualty insurance salesmen, finding that the Strong was useful for predicting success in this occupation. With Ward she reported on retests after one year on the job. Those who were succeeding tended to score higher on the Strong for that occupation, and the failures tended to score even lower than before.

Ghiselli, with a much smaller group, did not confirm Bills' findings. He found significant correlations with measures of proficiency on the job only for the CPA and Occupational Level scales of the Strong and with the Pressey Senior Classification Test.

Ferguson, in a study of 524 life insurance agents, reported that the quality of the district management was as important as an Aptitude Index score for predicting performance as measured by production or income. This introduces an important cautionary note in comparing various studies and certainly must also apply equally to many other occupational groups.

Two studies of personality traits of casualty insurance salesmen showed that the successful salesmen got more normal scores than unsuccessful ones on the Bernreuter. (Bills and Ward; Schultz.) One study reports them high in Economic and Political interests on the A-V (Table 12.3), and another reports them above the mean in lead-taking and in conflict-free relations with others. (Table 12.4.)

Lewis studied 50 male life insurance salesmen with the Kuder Preference Record and the MMPI. Comparing them with the norm groups he found the insurance salesmen to be significantly more depressive, hysterical, psychopathic, feminine, paranoid, and hypomanic. The scores reported by Daniels and Hunter for 4 MMPI scales on 10 salesmen are in accord. (Table 12.3.)

The findings of Harrower and Cox on 11 life insurance salesmen given the Group Rorschach were recorded in Table 12.6. The low number of human movement responses would suggest that, although an essential aspect of the agent's job is dealing with people, his interest in them is really not a personal one.

Automobile salesmen

Apparently the only study of this group is with an empathy test. The task in this test is to predict the responses of the typical individual in key behavior areas: aesthetics (music types); general human interests (what people read); and interpersonal relations (annoying experiences). Tobolski and Kerr gave the test to 32 salesmen from 2 companies. They also obtained sales records and sales managers' ratings of the subjects. Their findings are:

1. The empathy test scores are significant predictors of sales records: $r = +.44$.
2. The empathy test scores are significant predictors of job success by ratings: $r = +.71$.
3. The empathy test scores did not predict sales ($r. = +.12$) or ranking ($r = +.17$) of used car salesmen.

The correlations from this study are unusually high. It is to be hoped that if they are confirmed this type of test will become more generally used. It should be given further analysis, for the clinical implications are very important.

Traveling salesmen

A review by Hampton of studies of selling success reports several that have found relatively high Bernreuter social dominance scores for traveling salesmen.

LEVEL 4

House-to-house selling

Cover and Pressey studied 92 men whose job was selling foodstuffs from a truck, collecting, and canvassing for new customers. They were concerned only with the relation of age to efficiency and found that with increased age there was increased efficiency in handling the trucks (fewer accidents and repairs) and in business relations judgment (i.e., handling credit), but a falling off in sales. Apparently the factor of experience was not controlled. This could be the essential element in the first two findings, and sheer physiological age the essential element in the last.

In summary, we may note that in this Group the character of the personal relation is typically one of dominance. This distinguishes them clearly from those in Group I.

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CHAPTER 15

Group III Occupations: Organization

THE OCCUPATIONS in this Group are those concerned primarily with the organization and efficient functioning of government and of commercial enterprises. This Group includes a very large number of occupations: executives of government, industry, and business are here, and most of the so-called white collar occupations. Table 15.1 gives an extensive list. There are occupations in this Group at every Level.

Reference to tables in Chapter 12 (especially 12.1, 12.3, 12.5, and 12.8) gives some indication of the range of scores on intelligence and other tests for this Group. Various occupations in the Group have mean intelligence test scores ranging from —1.5 S.D. to +2.5 S.D. There have been several reports of the use of A-V Study of Values with this Group; they agree in assigning low Aesthetic and high Economic values to occupations classified here, but there are discrepancies in other value scores from one particular occupation to another. There is no general pattern on the few MMPI scores available, but these occupations tend to be associated with M-F scores for men somewhat towards the masculine range.

The MORS includes ratings of over 100 occupations in this Group. These can be tabulated and expressed in terms of an approximate median rating. A very regular pattern appears: good academic ability is required at upper Levels, and then this requirement is regularly lowered; clerical ability seems to be next in importance, followed closely by social ability, and these, too, decrease regularly from Level 1 to Level 6. Mechanical ability is practically irrelevant, but physical agility, of no importance at Level 1, becomes increasingly important with decreasing Level until it reaches a rating between B and C for Level 6.

TABLE 15.1. OCCUPATIONS IN GROUP III: ORGANIZATION

Level 1

High government officials (President, Cabinet members, etc.)
Industrial tycoons
Top executives, all organizations
International bankers, merchants

Level 2

Bankers
Brokers
Buyers (large business)
Certified public accountants
Executives, average
Personnel managers
Politicians
Public officials
Officers, ship and armed services, administrative
Union officials

Level 3

Accountants
Appraisers
Bank tellers
Buyers (small business)
Credit managers
Draftsmen
Employment managers
Executives, minor
Hotel managers
Manufacturers, small
Owners, catering, drycleaning, etc.
Postmasters
Private secretaries
Retail, wholesale, dealers and owners
Salesmen: specialty, technical
Statisticians

Level 4

Agents, freight
Bookkeepers
Cashiers
Clerks, correspondence, credit, express, mail, railroad, etc.
Compilers
Dispatchers
Floorwalkers
Foremen, warehouse
Inspectors, telephone and telegraph
Sales clerks
Station agents
Stenographers
Inspectors, street car, railroad

Level 5

File clerks
Multigraph operators
Notaries
Runners
Stock clerks
Typists

Level 6

Messenger boys

LEVEL 1

At Level 1 are entered such occupations as those of high government officials, the industrial tycoons, the international bankers and merchants. Included here also are such top level labor leaders as the heads of the AFL-CIO and the large unions. The primary criteria for inclusion in this Level are that the holders of these jobs have no superiors, and that the jobs put high demands upon them in terms of intellectual and personality qualities. They differ from those in Level 2 primarily in the extent and nature of their responsibilities and authority.

Occupational studies at this Level are rare; most of the available data are scattered through biographies of famous men. Furthermore, as is generally true at Level 1, there is considerable heterogeneity. It has already been remarked that our Presidents, Vice-Presidents, and Cabinet officers have had consistently more than the average education, and that 75 per cent of them came from homes of upper socioeconomic status. This has rather seldom been true for outstanding industrialists of the past, although it is becoming so more often.

LEVEL 2

Business executives

Bingham and Davis did an early study of 102 executives which has been widely quoted. They used an Army alpha-type test, and found a correlation of —.10 between the test and a criterion based on such factors as salary, investments, debts, club memberships, etc. They concluded that above a certain minimum, intellectual superiority was relatively less important for success in business than superiority in nonintellectual traits of personality.

Starch studied 150 executives; 50 were heads of large businesses, 50 were at mid-level in large businesses, and 50 were heads of small businesses. His investigation involved collection of detailed records by interview. He compared top executives to lower level ones, and found that in the top levels:

1. Three times as many went to college.
2. Three times as many made school records in the top third of their classes.
3. Four times as many pursued studies after their regular school years.
4. More than three times as many found ways to do their jobs better.
5. Fifty per cent more began to work and earn before the age of 15.
6. Two-thirds earned all or much of their school and college expenses.
7. Two and a half times as many had records of working hard and long hours.
8. Three times as many had a definite aim in life.
9. Six times as many sought and were willing to assume increased responsibility.

Starch felt that the greatest difference was in the force of the inner drive, and certainly items 3 through 9 would tend to support this. The increased number in college and in the upper third in college may also reflect some differences in intellectual level, but are as likely or more likely to be primarily dependent upon drive.

Thompson, with a smaller group, did find some test differences, but his tests may reflect interests as much as intelligence. He studied 15 superior and 10 average executives of a firm of consulting management engineers with a variety of tests. His criterion was based on performance records and ratings by partners. The superior executives were significantly higher (above the 5 per cent level of confidence) on the following:

Wonderlic.
Michigan Vocabulary Subtests for Government, Physical Science, Mathematics, and Sports.
Kuder Mechanical.
Adams-Lepley Firmness and Stability.

The average group was higher on the Kuder Social Service Scale, and both groups scored above the 93rd percentile on the Kuder Persuasive Scale.

Flory and Janney, on the basis of clinical interviews and some tests, reported success in appraising executive performance, but adequate validation data are not given. They believe that important factors are:

Intelligence, both abstract and concrete.
Emotional control, i.e., the ability to maintain steady output without emotional tension under any circumstances.
Skill in human relations, or leadership in face-to-face situations.
Insight into human behavior, of self and others.
Ability to organize and direct the activities of others.

Guilford studied the temperament traits of 20 executives on STDCR and GAMIN. He concluded that there were definite relations between success and the following: sociability, self-confidence, cooperativeness, and masculinity.

The most enlightening of these studies, from a psychological point of view, is that by Henry, although he gives no technical data. He used a number of personality tests, including the TAT and a short, undirected interview. Most of his over 100 subjects came from distributive business of moderately loose organizational structure, in which cooperation and team work are valued and relative independence of action within over-all policy is stressed. His test analyses were done blind, and checked against separately analyzed instruments, surveys of past job performance, and the anecdotal summary of present job behavior by superiors and associates. His general background discussion brings out a number of important considerations:

The business executive is a central figure in the economic and social life of the United States. His direction of business enterprise and his participation in informal social groupings give him a significant place in community life. In both its economic and its social aspects the role of the business executive is sociologically a highly visible one. It has clearly definable limits and characteristics known to the general public. These characteristics indicate the function of the business executive in the social structure, define the behavior expected of the individual executive, and serve as a guide to the selection of the novice.

Social pressure plus the constant demands of the business organization of which he is a part direct the behavior of the executive into the mold appropriate to the defined role. "Success" is the name applied to the wholehearted adoption of the role. The individual behaves in the manner dictated by the society, and society rewards the individual with "success" if his behavior conforms to the role. It would punish him with "failure" should he deviate from it.

> Participation in this role, however, is not a thing apart from the personality of the individual. It is not a game that the person is playing; it is the way of behaving and thinking that he knows best, that he finds rewarding, and in which he believes. Thus the role as socially defined has its counterpart in personality structure. To some extent, too, the personality structure is reshaped to be in harmony with the social role. The extent to which such reshaping of the adult personality is possible, however, seems limited. An initial selection process occurs which reduces the amount of time involved in teaching the appropriate behavior. Persons whose personality structure is most readily adaptable to this particular role tend to be selected, whereas those whose personality is not already partially akin are rejected.
>
> . . . From the research it became clear that the "successful" business executives studied had many personality characteristics in common. (It was equally clear that an absence of these characteristics was coincident with "failure" within the organization.) This personality constellation might be thought of as the minimal requirement for "success" within our present business system and as the psychodynamic motivation of persons in this occupation. Individual uniqueness in personality was clearly present; but, despite these unique aspects, all executives had in common this personality pattern.

His successful executives were men who had high drive and achievement desire, who had to accomplish in order to be happy. They had a strong need for continuous upward mobility. For some this meant achievement of competence on the job. For others the important things were increased social prestige and status in the organization and in the community. Their view of authority is characteristically crystallized towards superiors and subordinates rather than self, that is, they feel part of a system of wider and more final authority, and they do not see this authority as destructive or prohibiting. There are a few exceptions (more characteristic of past business enterprise) who feel ultimate authority only in themselves, and have no feeling of shared or delegated power. All the successful executives have a high degree of ability to organize unstructured situations and to see the implications of their organization; this may lead them to force situations into familiar molds and so to be resistant to new techniques. They are also decisive, that is, they can come to a decision between several courses of action, although this need not be immediate. They also have a strong self-structure, they know what they are and what they want, and have techniques for getting it. They are essentially active and aggressive, but not necessarily overtly hostile in dealing with others; these tendencies are usually well channeled into work and prestige struggles.

The picture is not all rosy, however. "In spite of their firmness of character and their drive to activity, they also harbor a rather pervasive feeling that they may not really succeed and be able to do the things they want to do . . . [this is] more likely to be a feeling of long standing within them and to be only accentuated and reinforced by their present business experience ' They are notably reality-oriented, but this may be so strong as to prevent vision and plan, and when realities are not in tune with ambitions may lead to restlessness and lack of ease.

The characteristics of their interpersonal relations within the organization seem to derive rather definitely from their relations to their fathers. They seem to have severed emotional ties, but it is critical that they do not retain resentment towards their parents. The maternal relation is most often completely broken, but there usually remains a positive tie to the father, who is viewed as helping but not restraining. To a considerable extent their attitudes towards their superiors seem to be similar to this; they are much less directed towards their subordinates. Dependency feelings are closely related to their relations to their fathers.

Henry sums up as follows:

> The successful executive represents a crystallization of many of the attitudes and values generally accepted by middle-class American society. The value of accumulation and achievement, of self-directedness and independent thought, and their rewards in prestige and status and property, are found in this group. But they also pay the price of holding these values

and of profiting from them. Uncertainty, constant activity, the continual fear of losing ground, the inability to be introspectively leisurely, the ever present fear of failure, and the artificial limitations put upon their emotionalized interpersonal relations—these are some of the costs of this role.

Labor union officials

There are several biographical studies of this group, but the only test scores available are on an empathy test.

Mills and Atkinson give the following personal data about 203 policy-making CIO and AFL leaders, who filled out a mailed questionnaire in 1945:

1. 83 per cent were born in the United States, and these came chiefly from the northeast regions of the country.
2. The average AFL leader is 55; the average CIO leader, 42.
3. 60 per cent come from laboring families; CIO leaders have a slightly higher socioeconomic background than do AFL leaders.
4. Both groups are more highly educated than is typical of the general population, with the CIO higher than the AFL. (This may be in part a reflection of the age difference; average education of the population is steadily increasing.)
5. 51 per cent were Protestant, 35 per cent Catholic, 4 per cent Jewish; 10 per cent had no religious affiliation.
6. 56 per cent were Democrats, the rest scattered among various other parties.
7. The majority worked as laborers in their industries, although there is a trend towards career union leadership in which the leader is basically a white collar worker with a short laboring interim.

Family background is clearly very different from that of men who go into academic pursuits and into science, but with these men, also, a higher than average education seems to be a pertinent factor. Since this is probably different from the family pattern it would be interesting to have fuller details. It may just reflect that extra drive which it is fair to assume that they have.

Van Zelst gave an empathy test (the same one used by Tobolski and Kerr for auto salesmen) to 64 business agents of 5 AFL building trades unions, and found the following correlations with the test, all positive:

Leadership rank (i.e., president, vice-president, etc.)	.67
Percentage of vote received in union election	.38
Score on a test How Supervise?	.55
Record in recruitment and organization of members	.60
Ability to settle grievances and disputes	.64
Enforcement of rules and regulations	.44

Another interesting, if peripheral, study is that of Van Zelst and Kerr on the lifetime worry experiences of Illinois building trades union leaders, based on questionnaires from 236 policy-making union leaders. The most frequently reported worry was economic (81 per cent). In this respect as in others they are like successful businessmen, psychologists, and Skid Row denizens (Dykman, et al.). They had the following sequential, somewhat overlapping clusters: an early personal worry cluster; a vocational success worry cluster in the thirties; a mid-life stress worry cluster (39–46 years); and a declining-years worry cluster. The first and third were very similar and involve peace of mind, morality of self, marital difficulties, and sexual relations.

It would be of the greatest interest to have clinical studies of labor leaders of the sort made by Henry on business executives.

Armed forces officers

Preston has used Flanagan's critical incidents technique (see p. 199) to develop a procedure for evaluating officers in the United States Army Air Force.

Witty and Lehman studied the lives of five military leaders, noting eccentricity and instability. They state that it is often true that this type of leader does not possess an unusual degree of ability.

Shartle for some years carried on a program of studies on naval leadership. He defines leader as meaning a person in high office. His studies are essentially on administrative behavior, not on technological knowledge or performance. His procedure has been to analyze the categories of possible activities, and then prepare patterns showing the proportions of time that each man spends on each activity. He thinks that a top executive tends to choose others with similar patterns and that an administrator probably takes his pattern with him when he moves. The activities he lists are:

1. Inspection of the organization.
2. Investigation and research.
3. Planning.
4. Preparation of procedures and methods.
5. Coordination.
6. Evaluation.
7. Interpretation of plans and procedures.
8. Supervision of technical operations.
9. Personnel activities.
10. Public relations.
11. Professional consultation.

12. Negotations.
13. Scheduling, routing, dispatching.
14. Technical and professional operations.

He also analyzed degrees of responsibilty, authority, and delegation of authority practiced by administrators, and from a factor study deduced the following dimensions of leader behavior:

1. Maintenance of membership factor: acceptability to group.
2. Objective attainment.
3. Group interaction facilitation.

These studies are being continued.

Bankers

The only information available for this group comes from Strong's key for bankers, which gives quite a clear picture. They seem to be people not of great rigidity, but of regularity, methodicalness, and steadiness, and with liking for reliable things, such as numbers and the more exact sciences. They differ from accountants primarily in having more and wider intellectual interests.

LEVEL 3

In some of the studies that follow it is possible that subjects are drawn from both Levels 2 and 3. This cannot be determined from the available data, but apparently the majority, at least, in each case belong in Level 3.

Accountants

Accountants are said by Morton to be dominant, stable, and self-sufficient people. Kaback also found them to be a generally well-adjusted group. In her Rorschach study of professional and pre-professional groups in this field she found them to be superior adults with good control and strong reliance upon rationality and inner stability. They are somewhat over-cautious perhaps, and not without anxiety, but they have good mental elasticity and rather wide interests.

Hotel administration

Lattin made a study of the factors associated with success in hotel administration. His data were the records of 595 subjects (Cornell graduates) who had been in hotel administration for at least 14 years. He rated them as successful or unsuccessful, comparing all the latter with the top 15 per cent on test records and academic data. The criterion for the unsuccessful group was that they had either left the field or failed to be promoted to executive positions. Selection of the contrasting group on the basis of test and academic records instead of by some criterion of job performance may have introduced some special factors into the comparison which are not particularly relevant to job success. This cannot be determined. His principal conclusion is that the major reason for failure in the hotel field is lack of the personality characteristics consistent with the required manner of life in the hotel business. These are not very well defined, but he reports a few test differences significant at the 6 per cent level or less. On the Kuder, the unsuccessful group had higher means on the Mechanical and Computational scales and lower on the Persuasive and Musical. On a values test, the unsuccessful scored higher on comfort and intellectual activity, and lower on power, society life, and recognition. Apparently, then, the successful hotel administrator needs to be a persuasive person, interested in social life, status, and authority, and disinterested in intellectual, mechanical, and computational activities. The bearing of the higher score on the Musical scale is not clear, unless it just indicates that some aesthetic sensitivity is helpful. This group presents rather a contrast to the accountants and in some respects is more like occupations in Group II. When further data are available the classification of this occupation might well be reconsidered.

Retail bakery chain store managers

Knauft studied 38 managers of a retail bakery chain with the Strong. He found that they did not fit closely any of the Strong occupational keys or the Occupational Level or M-F keys, and constructed and cross-validated a new key. The mean scores of his group were, however, very similar to those for CPA, accountant, office worker, and others in the same Strong group.

Independent retail grocers

Hampton studied 70 independent retail grocers with the Bernreuter and compared their scores on this with Dun and Bradstreet credit ratings and ratings of financial strength. The largest correlation between either of these and any of the Bernreuter scores was an insignificant +.16. But Hampton was not discouraged, saying

> . . . the successful grocer is, after all, only a person with an average personality. . . . The average person is the one who succeeds most fully and completely adapting himself to the strenuous demands of western civilization. . . . On the one hand, we are to be aggressive, on the other submis-

> sive; on the one hand cooperative, on the other competitive; we are to hate our fellow beings and at the same time we are to love them. In view of this fact it becomes evident that the average person will best succeed in most of the undertakings characteristic of our way of life.

This is, in fact, rather an important point. That they do not deviate from norms on the Bernreuter is not at all the same thing as demonstrating that there are no particular personality characteristics or combinations of them which retail grocers may have more often than other occupational groups, or which might be particularly helpful to them. On the other hand it is certainly true that there are occupations in our civilization which do not require any special abilities or temperamental qualities in higher or lower degree than the average, and being a retail grocer might be one of them.

Guilford studied the temperament traits of 143 supervisors in a large grocery chain by means of his Personality Inventories STDCR and GAMIN. The more successful supervisors showed greater degrees of emotional stability and of composure and cooperativeness.

LEVELS 4 AND 5

Sales clerks

Anderson reported that of 500 sales clerks at Macy's (New York department store) the Otis S-A indicated 75 per cent to have IQ's between 80 and 110, with 20 per cent below this and 5 per cent above. He did not subdivide the group into different sorts of sales clerks, and there is no evidence as to whether there is any relation between intelligence and success at selling.

Dodge has studied sales clerks with the Bernreuter, comparing small groups of least (15) and most (18) successful sellers. All of them scored high in social dominance. He selected the 41 items best differentiating these groups, and on another group of 42 subjects these items gave correlations with success of +.60 for men and +.36 for women. On this basis he reports that the better salespeople are: less moody, more self-sufficient and self-confident, more aggressive, more social, less self-conscious, less desirous of telling of their own good or bad fortune, less resentful of criticism, and more radical and unconventional.

Verniaud included 27 department store saleswomen in a study with the MMPI. Their only marked difference from the norms was in having decidedly masculine scores on the M-F scale. Perhaps this is another aspect of the observation reported above, that dominance is high in salespeople. Morton also reported them to be dominant, self-sufficient, and stable.

Clerical workers

For clerical workers there are a number of sets of norms on different clerical tests, particularly, which give some differentiation of this ability according to the precise nature of the work. Correlations between clerical tests and intelligence may range between about +.35 and +.65 depending largely upon the homogeneity of the groups studied. In general, however, it seems agreed that, for adequate performance of average clerical work, an IQ of at least 90 is needed. In addition such abilities as are tapped by the various clerical tests are certainly needed. A study by Andrew reports that the Minnesota Vocational Test for clerical workers measures an aptitude with positive relations to such abilities as those of observing and comparing, discriminating small differences rapidly, adjusting to a new situation, and attention.

Carruthers who presents a tabular summary of 66 studies of relations between clerical test scores and occupational performance felt that it was not unduly optimistic to expect correlations of +.60 to +.70 between test scores and clerical performance. The correlations reported in the studies reviewed by him range from a rho of —.39 to a rho of +.95. It can be seen that this group of occupations is more clearly related to a testable function than almost any other.

Dodge studied 192 clerical workers with a personality inventory, finding coefficients with job success ranging from +.64 to —.04. His analysis of the most differentiating items indicated that the successful clerical worker is not moody or subject to worry, is even-tempered, unwilling to accept responsibility, non-social, lacks self-sufficiency, and does not crave admiration. They differ from salespeople, then, chiefly in having less sociability, and less tendency to dominance in personal relations.

Kates' study of 100 routine male clerical workers with the Strong, the Rorschach, and Hoppock's Job Satisfaction Blank gave the following results:

> There was no relation between job satisfaction and either scores or letter ratings of the Strong Clerical key or with number of Rorschach signs of maladjustment.
>
> The job satisfaction or indifference of routine clerks who possessed the interests of successful office workers was not associated with a greater number of Rorschach signs of maladjustment.

It should be noted that studies utilizing sign techniques with the Rorschach have generally not proved very fruitful.

Secretarial

Male stenographers averaged somewhat above the mean on the AGCT. The first-rate private secretary clearly has a responsible post, but the average secretary is much less skilled and has little autonomy.

Stott canvassed 900 secretaries by questionnaire and reports on returns from 231 of them. Selective factors of those who replied are not known. Four-fifths said that they were satisfied with their careers, and three-fourths with their current jobs. He found no relation between satisfaction and salary, age, experience, or sex of employer or supervisor. He concluded that secretarial work was especially suitable for those with no particular abilities or desires. He found the majority unambitious, rather colorless, and only moderately intelligent. Perhaps the point is the same as that which Hampton made for retail grocers, that this occupation has few special requirements, and serves well for those with average capacities and desires.

Business machine operators

Gadel and Kriedt studied 193 IBM machine operators at a life insurance company. Several types of machines were involved. All operators had some part in planning their own work and had to be able to recognize when the machine was not operating correctly. Many could also do their own wiring. They used a job satisfaction questionnaire, an aptitude battery, including the Bennett Mechanical Comprehension, arithmetic reasoning and letter-digit coding, an interest questionnaire, and supervisors' ratings on job performance. All of these were intercorrelated, but only 2 correlations were statistically significant (and; with this number, could have occurred by chance). These were a correlation of +.41 between aptitude and performance, and one of +.44 between interest questionnaire and satisfaction.

STUDIES OF COLLEGE STUDENTS

A few studies comparing students in different fields are of interest here.

Speer has reported the Kuder Preference Records of 48 business students to be high in Computation, Persuasive, Literary and Clerical scales and low on Mechanical, Scientific, and Artistic scales, with the others average.

Hauser made a comparative study of ACE scores of two groups of Miami University freshmen enrolled in business and liberal arts schools. The results were as follows:

	N	ACE	L-Scale	Q-Scale
Arts students	885	100	62	35
Business administration	885	98	60	36

Only the difference in L-score (verbal) is significant, and it can be seen that it is not large. The distributions must overlap greatly.

Begelmann found business administration students to have average body build, to be tops in push-up and sit-up gymnastics, and to be average in intelligence. They preferred team games, and golf and tennis, and did not care for scientific, or technical, or social activities, or clubs. They disliked radio building, mechanical experiments, and chemical hobbies.

This Group appears on the whole to be around the mean in many personality and biographical characteristics, but at the upper Levels Kuder Persuasive scores are high, and dominance probably is also. In many occupations in the Group Clerical aptitudes are of great importance, but mechanical, scientific, and artistic interests are notably lacking.

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CHAPTER 16

Group IV Occupations: Technology

THIS GROUP, like the last, is a very large one. It includes all the modern industrial occupations, other than managerial, clerical, and sales. These occupations are concerned with the production, maintenance, and transportation of commodities and utilities, and the technology of transportation and communication. The great majority of those trained in the physical sciences belong in this Group, as well as those specifically trained in engineering. (The others are chiefly in university or similar settings and belong in Group VI.) The assembly line jobs, which are so typical of modern industry, are classified in Levels 5 and 6 of this Group. A fairly long list of occupations is given in Table 16.1.

Examination of the MORS ratings for jobs at different Levels in this Group indicates that both Academic and Mechanical ability are high in the upper Levels but then decline regularly; Social ability is rarely

TABLE 16.1. OCCUPATIONS IN GROUP IV: TECHNOLOGY

	Level 1	
Applied scientists, consulting, chief	Designers, auto, tools, etc.	Inventive geniuses
Commanders, large ship	Engineers, consulting, chief: architectural, civil, mechanical, etc.	
	Level 2	
Applied scientists, geological, chemical, etc.	Factory managers (requiring technical knowledge)	Ship and armed services officers, technical
Engineers, architectural, civil, etc.		
	Level 3	
Aviators	Engineers, marine, chief	Small factory managers
Contractors, building, carpentry, plumbing	Factory foremen (DOT I)	
Draftsmen	Radio operators	

TABLE 16.1. (*Continued*)

Level 4

Blacksmiths
Bookbinders
Brakemen
Bricklayers
Cabinet makers
Carpenters
Electricians
Electrotypers
Engineers, locomotive, stationery
Engravers
Factory foremen (DOT II)
Glass-blowers
Gunsmiths
Inspectors, factory
Jewelers
Linotypers
Lithographers
Machinists
Mechanics, plane, auto
Millers, grain
Millwrights
Motormen, electric railroad
Movie operators
Ornamental ironworkers
Painters, house, sign, etc.
Paperhangers
Patternmakers
Photoengravers
Piano tuners
Plasterers
Plumbers
Printers
Repairmen, most varieties
Steeplejacks
Stonemasons
Structural steel workers
Tailors
Telegraph operators
Tinsmiths
Toolmakers
Typesetters, compositors
Upholsterers
Wood-carvers

Level 5

Annealers
Auto assembly workers
Bakers
Boilermakers
Bulldozer operators
Butchers
Car motormen
Cobblers
Concrete workers
Coopers
Deliverymen
Dry-cleaner hands
Dyers, factory
Finishers
Lathe operators, automatic
Laundry workers
Leather workers
Linemen, telephone and telegraph
Motor deliverymen
Riveters
Roofers
Sawmill workers
Sheetmetal workers
Smelter workers
Stonecutters, machine
Switchmen
Tire repairmen
Truckdrivers
Vulcanizers
Waterworks tenders
Wheelwrights

Level 6

Foundrymen
Helpers, carpenter, plumber, etc.
Laborers, construction, process, etc.
Longshoremen
Munitions handlers
Packers
Section hands
Trackmen
Wrappers
Yardmen

of importance, but moderate Clerical ability is useful in the upper Levels. Physical agility, irrelevant at the higher Levels, becomes of some importance in the lower ones.

LEVELS 1 AND 2

Level 1 includes inventive geniuses, ship commanders, consulting research scientists, and similar groups. Most applied scientists belong in Level 2. The men in Level 1 are only those who have full control of their own programs and procedures. This is not true of many scientists in industrial or governmental jobs.

Engineers

Under the sponsorship of the Office of Naval Research, Flanagan and his associates have for some time been working on an investigation of the activity and products of the research worker in Naval research laboratories, in the hope of eventually improving selective techniques for these positions. Their approach has been to determine what sorts of behavior are of specific importance within the given laboratory set-up. Their estimates of importance are based on lists of descriptive reports of a large number of "critical incidents." Although there were certain differences between the higher and lower personnel levels, between certain specific fields, such as chemistry and electronics, and between those doing primarily testing and those doing primarily basic research, the basic list of critical requirements was similar for all groups studied. All their groups belong in our Group IV, but it is certain that these critical requirements would apply almost equally well to research in any other field. The list has been arranged in check-list form for evaluating job performance. The main areas included are given below. On the basis of these findings they have developed a test for predicting research behavior and for use in selecting personnel. Studies of the test's validity have not yet been reported.

I. FORMULATING PROBLEMS AND HYPOTHESES. Including identifying and exploring problems, defining the problem, and setting up hypotheses.

II. PLANNING AND DESIGNING THE INVESTIGATION. Including collecting background information, setting up assumptions, identifying and controlling important variables, developing systematic and inclusive plans, developing plans for the use of equipment, materials, or techniques, anticipating difficulties, determining the number of observations.

III. CONDUCTING THE INVESTIGATION. Including developing methods, materials, or equipment, applying methods and techniques, modifying planned procedures, applying theory, attending to and checking details, analyzing the data.

IV. INTERPRETING RESEARCH RESULTS. Including evaluating findings and pointing out implications of the data.

V. PREPARING REPORTS. Including describing and illustrating work, substantiating procedures and findings, organizing the report, using appropriate style in presenting report.

VI. ADMINISTERING RESEARCH PROJECTS. Including selecting and training personnel, dealing with subordinates, planning and coordinating the work of groups, making administrative decisions, working with other groups.

VII. ACCEPTING ORGANIZATIONAL RESPONSIBILITY. Including performing on or assisting in the work of others, subordinating personal interests, accepting regulations and supervision.

VIII. ACCEPTING PERSONAL RESPONSIBILITY. Including adapting to associates, adapting to job demands, meeting personal commitments, being fair and ethical, showing interest in work.

This approach is analogous to much of the research in selection of pilots, motormen, etc., in that it consists essentially in working from simplified, almost purified, samples of what the job consists of. It makes no attempt to get at basic individual characteristics. It has great practical utility but it is not intended to, and does not, advance our knowledge of basic processes and their relation to these behavioral expressions. Even pragmatically it has the limitation of not being predictive beyond the immediate level of the subject in maturational terms.

Mandell and Chad have worked with engineers in government agencies, with the goal of devising tests for selection purposes. Supervisors' ratings were the criteria, and with these they obtained positive correlations with the Gottschald (a formulation test), with abstract reasoning, with a physics test, and a test of reading tables.

O'Connor lists as characteristics common to engineering executives: structural visualization, objective personality, large English vocabulary, accounting aptitude, and many others (not well defined). Characteristics common to technical engineers are given as: structural visualization and subjective personality. The spatial visualization factor agrees with test results on creative physicists, who are also high in this capacity.

A more clinical approach to the problem of successful choice of engineers has been undertaken by Harrison and Jackson. They point out in introduction that:

> While there have been innumerable validity studies which correlate batteries of psychological tests with job proficiency criteria and while there have also been many attempts to predict the achievement of students in engineering school from psychometric measures, the technical literature is singularly unrewarding on the subject of predicting job success of engineers in industry. . . . In recent years it is being realized in some quarters that a strictly psychometric or statistical approach to occupational prognosis is limited because it ignores psychological characteristics which, while not directly measureable, are nevertheless important and may be evaluated. . . . Furthermore such a psychometric approach neglects not only intrapersonal dynamics but also the integration of segmental information about the individual which is necessary for understanding the probabilities of job success.

They evaluated 113 graduate mechanical engineers who had not yet been assigned to stable positions, on the basis of a battery of ability, aptitude, interest, and personality tests, as well as interviews. These evaluation reports were compared with subsequent job performance under two conditions: (1) the psychologist's recommendation must have been followed; and (2) the supervisor was required to have had at least three months' close observation of the man he was rating. Supervisors were requested to state whether they agreed highly, mostly, slightly, or not at all with the descriptions and findings in the report. Degree of agreement is shown below:

	N	%
High degree of agreement	45	39.8
Predominant agreement	58	51.3
Slight agreement	9	7.9
None	1	0.9

They also asked for evaluation of the data by directors and division managers with similar but not quite so favorable results. Detailed reports on the tests, which would give descriptive material for this group of professional persons are not given. The report, however, does emphasize the necessity for knowing more about a man than a few test scores.

There are a number of studies of engineering student populations. They customarily rate high in intelligence tests, particularly in quantitative scales, and they are high in Computational interests. (See Table 12.2 and Bolanovich, 1944.) Begelman's study of freshmen in various schools reported the engineering and science students to be of average body build, low in physical performances, near the top in intelligence, and with almost exclusively intellectual hobbies (reading, especially technical, chess, etc.).

Speer has done some interesting research on different patterns among persons electing various aspects of fire protection engineering. He found in a study of 1,000 freshmen at the Illinois Institute of Technology the following differences among students:

Students with high Persuasive and low Science scores tended to enter sales.

Students with high Mechanical, Science, and Social Service scores and low Persuasive scores tended to enter engineering.

Students with high Computation, Literary, Musical, and Clerical, and low Mechanical and Scientific scores tended to leave the fire protection field altogether.

Karn, using the A-V Study of Values with male juniors specializing in various branches of engineering (*N*'s, 38 to 70), found a number of significant differences. These are shown in Table 16.2.

TABLE 16.2. COMPARISON OF A-V VALUES FOR STUDENTS IN DIFFERENT ENGINEERING SPECIALTIES[a] (KARN)

	Metallurgical	Electrical	Chemical	Mechanical	Civil
X	Are Lower than X on				
Civil	*Religious*	Political			
Metallurgical		*Economic* *Political*	Economic	*Aesthetic*	*Aesthetic* Economic
Electrical	*Religious*				
Chemical		Political		*Aesthetic*	Aesthetic
Mechanical		*Economic* Political	Economic		Economic

[a] Differences with critical ratios over 2 only; those with critical ratios over 3 are italicized.

LEVEL 3

Airplane pilots

There have been a very large number of studies with this group, most of them made with combat personnel, and most of them with cadets rather than with experienced personnel. In general it may be said that such discriminative data as have been found have related to specific psychomotor capacities (varying with the classification of the subjects), intelligence, and personal history. The attempts to use personality tests for the selection of combat personnel who will show the greatest resistance to breakdowns have been generally negative. Research up to 1945 has been summarized by Viteles. Much of the research during the war years has been published in AAF Aviation Psychology Reports. Since then the Army Air Forces have continued to devote much time and effort to these problems, and reports by Sells and Barry review the later work. It can only be said that many of these researches are promising but that so far none has been definitive.

Super has surveyed the clinical research in the Aviation Psychology Program of the Army Air Forces. He summed up by noting that cadets who are emotionally insecure are less likely to succeed in training than are others, but that such insecurity may be turned into an asset, or that at least it can be counteracted by emotional control.

This is an important warning against always interpreting above-average "insecurity" or "anxiety," etc., as necessarily undesirable. Below-average conditions can also be undesirable or not, depending upon the particular circumstances and the particular controls which are available.

Production supervisors

Poe and Berg have studied steel industry production supervisors at an intermediate level. They hypothesized that those rated high and those rated low in performance would reveal personality differences, but their data from a 7-hour battery of paper and pencil personality inventories did not support the hypothesis.

Foremen

Some foremen belong at this Level, some at Level 4. The problem of selecting good supervisory personnel is one with which industry is very much concerned, and there have been a number of studies, not only on the selection but also on the development of good foremen. Only a few of the more extensive ones will be quoted here. Although some types of foremen belong in Group III most of the studies pertain to Group IV.

Particular interest attaches to research by Shartle. This is a clinical study, using interview and case history material as well as the Strong. His control group was one of workers with job skill considered equal to that of the foremen, but who were believed incapable of supervising others. The successful foremen differed from the nonforemen in early history as well as in present behavior. The foremen had had a more normal development, showing less withdrawal from others, less indifference to the actions of others, and fewer antagonistic reactions towards others. Frequently in both groups there was a close relationship between reported childhood behavior and present job behavior. Both groups showed wide variation in their preferences for strictness and directness, and suggestion or order in work situations. For example, two equally successful foremen (in terms both of production and of attitudes toward them of superiors and inferiors in the hierarchy) might have completely different methods for handling the men working under them. There would, of course, have to be some mutual adjustment or perhaps even selection between workers and foremen to account for this. Other differences between these groups reported by Shartle are listed below. A difference in basic stability is strongly suggested.

More Often Found in Foremen

Father foreign-born
Mother foreign-born
Age over 40
Good attitude toward early associates
Over 20 years with company
Previous selling experience
Ownership of own home

More Often Found in Nonforemen

Restless movements during interview
Others in home during childhood or adolescence (grandparents, etc.)
Repetition of grades in school
Self-conscious appearance in interview
Tense or strained facial expression and low intensity of voice during interview

Sartain made an extensive study of the relation between scores on various standard tests and supervisory success in an aircraft factory. His subjects were 46 inspectors, 40 foremen, and 85 assistant foremen. His criterion was supervisors' ratings. Tests were Otis SA, Bennett Mechanical Aptitude, Kuder, Bernreuter, and Minnesota Paper Form Board. All the correlations for foremen were under .20 and none was significant.

Schultz found results similar to Sartain's in a study of 30 foremen and assistant foremen. His criterion was a combination of supervisors' ratings for employee relations and budget control efficiency. This correlated +.11 with the Bennett and +.36 with one (unspecified) scale of the Bernreuter. Correlations with Strong's scale for Production Manager and Occupational Level were +.38 and +.22.

On the other hand, Shuman, also studying supervisory workers in three aircraft or propeller plants, found significant correlations for some of these tests with supervisors' ratings on production, handling of workers, housekeeping, and over-all opinion. Bi-serial *r*'s were: for the Bennett +.47, for the Otis, +.39, and for the Minnesota Paper Form Board +.47.

Clearly there are considerable discrepancies between Shuman's study and the others. It is impossible to be certain, but it seems most probable that the discrepancies come either from different emphases in supervisors' ratings or from different situations within the plants which would, for example, make mechanical ability on the foreman's part of more importance than facility in human relations in one factory, and the opposite true in another. Such discrepancies emphasize the acute necessity for exact description not only of the job itself but also of the general set-up with reference to responsibilities and human relations.

LEVELS 5 AND 6

These Levels include the mass-production, assembly line jobs, as well as a number of others. Walker and Guest have made an important study of the characteristics of mass production jobs and of the men who hold them. Their study was made in an auto assembly plant, supplemented with personal home interviews of a stratified sample of 180 workers. They list the following as major characteristics of the mass production job:

1. Mechanical pacing of work.
2. Repetitiveness.
3. Minimum skill requirement.
4. Predetermination in the use of tools and techniques (i.e., not a matter of choice on the part of the worker).
5. Minute subdivision of product worked on.
6. Surface mental attention.

Their interviews indicate that almost half the men keep these jobs solely because of the pay, but the others do find other satisfactions, or at least some compensations. Nevertheless, those who continue in such jobs as these must somehow be able to tolerate the conditions surrounding them. A number of these conditions could be alleviated to some extent, but little effort is generally made on the part of management to do so. Such adaptation must be more difficult for some sorts of people than for others, even assuming a generally not very high level of intellectual or cultural interests and low motivation.

Factory employees

Bolanovich studied 7,200 female employees on a similar repetitive assembly line job with an interest questionnaire of 271 items. Seven months later this was analyzed to determine the extent to which specific items would identify those who quit the job. Of the 271 items, 114 proved to be discriminating. The test was later used in selecting workers, with a reduction in turnover after 6 months from 54 per cent to 31 per cent; it was later cross-validated on another group. The characteristic patterns that appeared in the group of workers who remained on the job were: a preference for very simple activities, which were free of any responsibility for thought and application, and an expressed dislike for mechanical and repetitive operations. Bolanovich suggests that the expression of dislike for the sort of mechanical and repetitive operation which was characteristic of the job might indicate more realistic thinking than an expression of liking for it, and that the realists had come to terms with necessity.

Shuman's study, referred to above, included also reports on a number of factory job groups. These are listed below. It is notable that the correlations differ markedly with different jobs. These are bi-serial correlations between the indicated test and ratings by supervisors of good, average, and poor:

	Otis Q.S. Beta A	Minnesota Paper Form Board	Bennett Mechanical Comprehension
Engine testers	.57	.16	.17
Machine operators	.48	.38	.44
Job setters	.46	.59	.73
Tool room learners	.49	.42	.46

Anderson studied 174 machinists on the Adult Placement Test (verbal and number) and found a correlation between total score and supervisors' efficiency ratings of +.40. Other tests gave much lower correlations. She noted that personal history and interview data were important in selection.

Candee and Blum reported that, for work in a watch factory, it is possible to determine a critical score on finger and tweezer dexterity, below which a worker will not be suitable, but that above this score discrimination of superior and inferior workers is not clear-cut.

Hayes found pegboard test scores to be consistently related to job performance for: bunch hands, coil winders, punch presses, and insulating machine operators.

Surgent found the Purdue Assembly and Tweezer Dexterity tests gave a multiple *R* of +.595 with factory performance of radio tube mounters.

It would seem that, in such occupations as those reported above, some specific psychomotor dexterities are required at a minimum level. It is also clear that this is by no means the whole story.

Bus maintenance and repairmen

This group was studied by Ghiselli and Brown, who used ratings by foremen and superintendents as a criterion. Correlations between this criterion and various tests were:

Arithmetic test	+.19
Spatial relations	+.21
Mechanical principles	+.30
Intelligence	+.37

Motormen

Viteles has done a good deal of work on the selection of motormen for streetcars. He found tests of *g* and Pressey X-O test of no significance, but was able to develop a selection test, including various experimental procedures, such as reaction to a signal board, which was satisfactory.

Truckdrivers

Mls, using Army Beta, reports research upon the relation between intellectual level and ability to drive a truck. He found that a minimum IQ of 82 was required for satisfactory performance and that one of 94 corresponded with maximal driving ability, which did not improve beyond this level except in extreme cases. He concluded that intelligence tests could permit elimination of the unfit, but did not select drivers of superior ability.

Packers and wrappers

Blum and Candee, in a study of department store packers and wrappers to determine criteria useful in selection, found that tests of physical dexterity were less predictive of the criterion of production (number of packages wrapped) than was experience. A somewhat surprising finding was the correlation with production of ×.57 for the Minnesota Clerical: Numbers and of +.65 for the Minnesota Clerical: Names.

Ghiselli, studying the use of tests for selecting inspectors-packers in a pharmaceutical house, with superiors' ratings as a criterion, found a correlation with the Clerical: Numbers of +.29, but one of —.26 for Clerical: Names. This group had a somewhat more complicated job than the last: filling vials, stoppering, examining, labeling, cartoning and packaging. The highest correlation he obtained was with the Minnesota Paper Form Board: +.57. Other correlations were: Minnesota Peg Board, —.50; rate of manipulation: turning, —.40, placing, —24; MacQuarrie Mechanical Ability, +.19. Clearly job names and test names are poor indicators of relationships.

We may sum up the reports in this chapter as indicating the usual variation in intelligence with Level but as also indicating that at most Levels such special abilities as spatial visualizaton and mechanical aptitude are pertinent. It would also appear that in general, for different sorts of work, minimal essential levels of these and even more specialized capacities can be determined, but that, beyond that necessary minimum, other factors enter, increasingly as the occupations go up in the scale. There is the further suggestion that the more clinically oriented studies are getting at more basic and useful data.

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CHAPTER 17

Group V Occupations: Outdoor

This Group includes occupations in agriculture, animal husbandry, fisheries, forestry, and mining. These are the occupations by which our natural resources are cultivated, gathered, or otherwise accumulated. The end products may be used without further change, other than processing for preservation and handling, or they may be the raw materials which are then modified by the various technical processes with which Group IV occupations are concerned. It is difficult to find a comprehensive name for this Group. "Outdoor work" is descriptive of most of the occupations although one might quibble over its application to mining. A considerable degree of physical activity is characteristic of most of these occupations, and at all Levels.

This is the most neglected Group as far as psychological studies go, although it includes a large proportion of the population. Of the experienced workers in the United States in 1940, 18 per cent of the white and 35 per cent of the Negro workers were in the group of farm operators, tenants, and laborers alone. One reason for the neglect may be that, except in some of the mining occupations, there is generally no such concentration of personnel as there is in most of the other Groups.

Table 17.1 lists different occupations in this Group at the different Levels.

The only available studies in this Group are on farmers, as reported below. The subjects, except students, are probably at Level 3.

Farmers

Wilcox, Bras, and Pond have made an interesting study of factors associated with financial returns in farming. Their subjects were 136 dairy, hog, and poultry farmers, who were asked about their reasons for entering farming, their liking for it, and various other attitudes. The farmers who expressed dislike showed appreciably smaller average net earnings than those who liked the occupation. Those who entered farming just because of personal preference earned substantially larger incomes (when all variations due to factors other than labor were discounted) than those who had become farmers because they did not know what else to do or because they had inherited farm property.

TABLE 17.1. OCCUPATIONS IN GROUP V: OUTDOOR

Level 1

Consulting specialists

Level 2

Applied scientists, agronomists, etc.
Horticulturists
Landowners and operators, large
Landscape architects
Range management specialists
Wildlife specialists

Level 3

Apiarists
County agents
Farmers, individual owner
Fish culturists
Floriculturists
Forest rangers
Lumber camp managers
Nurserymen (owner)
Poultrymen
Tree surgeons
Truckgardeners
Surveyors

Level 4

Fishermen (owner)
Laboratory testers (dairy products, etc.)
Landscape gardeners
Miners
Oil well drillers
Ore graders
Shaftmen

Level 5

Farm tenants
Cowpunchers
Crusher operators
Gardeners
Hostlers
Irrigators
Lumber inspectors
Miner helpers
Nursery employees
Oil pumpers
Teamsters
Trappers
Tractor drivers

Level 6

Dairy hands
Ditch hands
Farm laborers
Fishermen
Hoboes
Lumberjacks

A few farmers in veterans' groups and some agricultural students are included in some studies. (Tables 12.2 and 12.3; Begelman.) They tend to be at or below the average of college groups in intelligence. It was noted in Chapters 8 and 10 that relatively fewer sons of farmers than formerly are becoming farmers, and that the total number of persons engaged in agricultural pursuits is proportionately less than it was.

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CHAPTER 18

Group VI Occupations: The Sciences

This Group comprises the occupations concerned with the development of science and its application in all nontechnological situations. At the upper Level it includes all research scientists, university and college science faculties, and those whose professions are based on the application of scientific principles, except in technology. Table 18.1 gives a list of many occupations which belong in this Group. Lower Level occupations in this Group are all of a supportive nature, and there are not many of them.

TABLE 18.1. OCCUPATIONS IN GROUP VI: THE SCIENCES

Level 1

- Independent research scientists, all fields
- Mathematicians
- Medical specialists, all types
- Museum curators
- University and college faculties in science

Level 2

- Dentists
- Nurses
- Pharmacists
- Scientists, semi-independent
- Veterinarians

Level 3

- Chiropodists
- Chiropractors
- Laboratory technicians (trained)
- Medical technicians
- Weather observers
- X-ray technicians

Level 4

- Embalmers
- Technical assistants

Level 5

- Veterinary hospital attendants

Analysis of MORS ratings shows that Academic ability is important at the upper Levels but becomes decreasingly so; Mechanical ability and Physical agility are generally irrelevant, but some Social ability is required, particularly by practitioners and teachers.

LEVEL 1

Except for biographies, Walker's study of mathematicians and my own studies are the only ones available for this Group at the highest Level. These studies include biologists, physical scientists, psychologists, anthropologists, and paleontologists, and the subjects are top research scientists and general university and museum faculties.

Mathematicians

Walker's study of mathematicians and chemists, in an investigation of the creative process, does not afford us any clues as to what sort of persons either of these groups are. His findings did not support his general hypothesis that creative individuals should manifest all the following specific characteristics: originality, flexibility, fluency, the ability to perceive disequilibria in the environment, the ability to tolerate ambiguity, only 1 of his 18 subjects showing all of them. All his subjects did show some of these characteristics, however.

Physical scientists: Research

The studies of physical scientists included physicists, physical chemists, geophysicists, astrophysicists, and theoretical engineers. The study of individual scientists reports clinical analyses and life histories of 22 men who were selected by their peers for their eminence in research (Roe, 1951). This group is subdivided into those doing theoretical and those doing experimental work, since it developed that this difference in orientation is associated with different personality and intellectual factors. Age range was 31–56, average, 45.

Differences between experimentalists and theorists appear even in their backgrounds: 50 per cent of the former and 84 per cent of the latter were the sons of professional men; 4 of the former and none of the latter were the sons of farmers. The educational level of the parents of both groups, particularly of the theorists, is considerably above that of the population at large, and a family background of learning is generally present. None of the sibs of any of this group are skilled or unskilled workmen.

For the theorists, going to college was usually taken for granted in the family, but it was unusual for the experimentalists. The theorists early liked school and reading, the experimentalists rarely did. The psychosexual development of all of them was more often retarded than not, and few of them have any genuine social interests now. A striking aspect of the present adjustment of both groups (clear both in interview data and in projective tests) is the nature of their relationships to other persons. For the most part, these are not close, and are relatively unimportant to them in the over-all picture of their lives. This does not prevent their being adequate husbands; divorces were fewer in this group than in my other groups of scientists. On the whole the theorists seem to have developed more adequate social contacts. Both groups have normal aggressive tendencies, but these are better controlled with the theorists and less likely to be handled by getting out of the provoking situation, or, if this is impossible, by explosive outbursts.

Attitudes towards their parents now and in earlier years seem to have been an important factor. They are largely free of present parental ties of any strongly emotional sort, and without guilt over this. Although there is frequently present an open or covert attitude of derogation of their mothers they almost universally respect their fathers profoundly although they seem never to have been very close to them. This situation may well have been a factor in their adoption of a profession which has more "masculine" values in our culture than have many of the learned professions. (You will remember that Henry noted in business executives a similar freedom from conflictual parental ties.)

Rorschach protocols of the theorists are generally much richer than those of the experimentalists, although they may be rather disorderly. The formal aspects of reality are of very little concern to the theorists. Both groups give Rorschach responses of a sort usually interpreted as indicating a good deal of easily mobilized anxiety and much in their behavior is confirmatory. It is also true, however, that this sort of response (concern with space and space-filling things, and with inanimate movement) is related to the content of their profession.

Both groups have high intelligence, but here, too, they differ. The test results (raw scores) are given below:

	Verbal		Spatial	
	Average	Range	Average	Range
Theorists	64.2	52–75	13.8	5–19
Experimentalists	46.6	8–71	11.7	3–22

Even with these small groups the difference between the means on the verbal test is significant at the 5 per cent level. The verbal score mean for the theorists is at an IQ level of about 168, the spatial at about 142. Clearly the theorists are an extraordinarily highly selected group with respect to intelligence as tested; it is less important, apparently, for the experimentalists. The individual theoretical physicist is likely to have a higher standard score on the verbal than on the spatial test; with the experimentalists the reverse is true. The physicists are higher than any of the other groups of scientists on the Spatial test.

The two groups of physicists differ also in their use of imagery, the experimentalists being almost entirely dependent upon visual imagery, whereas the theorists use both visual and verbal. Both rely upon imageless thought to some extent, but the theorists either recognize it more readily or make considerably more use of it.

It may be remarked that it was not suspected in advance that these two groups of physicists would differ so noticeably. The fact that in working up the results of the study it became apparent that the two groups were dissimilar in so many respects gives a clue to the sort of discrepancies that often occur in clinical studies. In some respects experimental physicists are more like biologists than they are like theoretical physicists, although in the over-all picture they have more in common with theoretical physicists. This sort of relation would be completely obscured had the data been lumped together throughout. The degree of homogeneity of the sample required for any study depends upon the nature of the study, but it often happens that the extent of homogeneity of a sample with respect to crucial variables cannot be known in advance, and it may not appear in the final results unless they are scrutinized with extreme care.

Physicists: University faculties

Faculties in physics and physical chemistry at six institutions were the subjects in a Group Rorschach study (Roe, 1950). A number of these men were also doing research of a high order. As a group they showed an unusual approach, with much greater than average interest in and capacity for perceiving unusual aspects of a stimulus. They also reversed the usual figure-ground relation quite frequently. Their general underdevelopment of intellectualized controls was reflected in disinterest in accuracy of form. Strong basic anxieties appeared to be present, and these were not intellectualized or structured but remained easily mobilizable. In comparison with the studies of eminent individuals reported above, it was noteworthy that this group showed no major differences.

Biologists: Research

The study of research biologists included 20 men from different specialties (Roe, 1951*a*). All were American-born and -trained, 38 to 58 years old, with a mean age of 51.

Parental backgrounds were superior: 45 per cent of the men had fathers in professional occupations, and in all but two of the homes it was clear that education and learning were specifically valued. In many of the parental homes, there is no evidence of great warmth, and the incidence of death, divorce, or serious illness among parents of these men (resulting in considerable family disruption and stress for the children) was high, amounting to 40 per cent. The psychosocial development pattern is similar to that found for the physicists.

A childhood interest in natural history was found in only half the group. Discovery of the possibility of doing research on their own was usually the determining factor in their choice of a career.

Scores on the Verbal-Spatial-Mathematical Test are given below:

	Mean	Range
Verbal	56.6	28–73
Spatial	9.4	3–20
Mathematical	16.8	16–27

Some patterning of scores is evident; the anatomists and physiologists and all but one of the botanists have higher standard scores on the verbal test; the geneticists and the biochemists are all better on one of the nonverbal tests. The subgroups are very small, and further study is needed for cross-validation.

In imagery, the biologists tend as a group to a consistent preference for visual imagery, and this may be of an extraordinarily rich and manipulable sort.

From the projective techniques came confirmation of the nature of the psychosexual development and further indications of a nonsocial orientation (*not* anti-social; they are just not interested in other persons to any great extent, although they are at least superficially adequate in handling social relations). Rational controls are important to them and characteristic of them. They tend to be persistent rather than aggressive, and quite stubborn. They have a strong distaste for the imaginary and a strong preference for concrete realities. Most of them are rather conventional and with a considerable sense of personal responsibility.

Biologists: University faculties

The Group Rorschach study of university faculties in biology included as subjects 18 women and 170 men from 9 different institutions (Roe, 1951*b*). There were no significant sex differences. In spite of considerable variation, there are some consistent trends which stand out even more strongly in comparison with other groups of scientists. They are generally a more orderly and much more controlled group than the others. They do give evidence of deep-seated anxieties, but these are not too badly handled and they are markedly disinterested in other people.

Although subgroups in different fields of biology are small, there is some evidence of real differences in personality characteristics. The distinction is one of emphasis and of tendencies rather than a sharp separation. All biologists are more like other biologists than they are like physicists or social scientists. The anatomists are generally the least intellectually controlled; the physiologists seem to show more free anxiety and more concern with immediate personal problems than do the others. The botanists appear to be a generally rather well-adjusted group, and rather placid, with no particular deviant tendencies. The geneticists are a more colorful group than the others, with somewhat more emotional dominance, but this is of a sort different from that shown by the anatomists.

Paleontologists

There is only one small study (Roe, 1946) which reported examination of 18 research scientists and 9 technicians with the Group Rorschach. The scientists included 3 museum directors, 8 professors, and 7 curators, all of whom were actively engaged in research. They were 25 to 58 years old; the technicians were 19 to 62. The technicians belong in Level 4, but they will not be separately reported there since they differed from the scientists chiefly in ways related to intellectual and educational level. The group as a whole was strikingly homogeneous in Rorschach characteristics. They tend to abstractions, and to formalized, objective thinking, with a marked inhibition of any tendencies to project themselves into a situation. They empathize little, either with things or with other people, and they have a rather passive emotional adaptation. It was noted that this particular sort of personality picture is one for which their particular profession offers few problems.

Psychologists: Research

The problem of classification of psychologists has already been discussed. Nonclinical psychologists generally belong in this group. Here, too, the data are from my own studies, which included 14 psychologists (Roe, 1953). Ten of these were experimental psychologists, one was a clinician, and the others were active in social and developmental psychology. They averaged 46.7 years of age.

Half this group were the sons of professional men. A striking finding was the large number in whose families there was some definite sense of personal or family superiority and overt family concern with social status either as accomplished or desired. Their earliest interests were most often English literature, although some had social interests and some began in chemistry or engineering. A number of them had health or constitutional problems. Family patterns involving overprotection and firm, if not overt, control were very common in the group; present resentment and difficulty with parents are more frequent than for other scientists except for anthropologists. The pattern of psychosexual development is in marked contrast to that in the physical and biological science groups. The age of beginning open expression of heterosexual interests was much lower, and generally social interests of all sorts have always been much stronger.

Their scores on the Verbal-Spatial-Mathematical Test are as follows:

	Mean	Range
Verbal	57.7	23–78
Spatial	11.3	5–19
Mathematical	15.6	8–27

All but 3 psychologists had a higher standard score on the nonverbal than they did on the verbal tests.

Only 2 psychologists made much use of visual imagery; the others relied heavily upon verbal imagery and imageless thinking.

The projective techniques confirm the marked differences from the other scientific groups in attitudes towards parents and other persons. In addition, psychologists are found to have many dependent attitudes, but they also have supportive ones. They are quite free in the expression of aggression which is likely to have a strongly oral coloring. They are extremely productive on the Rorschach (mean responses 66, as against 33 and 22 for physicists and biologists), and are very rapid, casual, and unsystematic in their responses. The most notable characteristic is the production of many human movement responses, but also of a number which are restricted in some way or poor. They can exert rational control when they wish to, but generally feel no compulsion to make a point of it. Conflicts over dominance and authority are common.

Psychologists: University faculties

Kitson's early personnel study of psychologists has been outdated by the great changes in the profession since the mid-1920's.

Baas' study of the Kuder Interest patterns of psychologists shows all subgroups to be high on the Scientific and Literary scales, and generally low on the Mechanical, Persuasive, and Clerical scales. There were some differences among subgroups: the experimental and industrial were higher than the counseling on the Mechanical scale; the industrial and counseling were higher on the Persuasive; and the industrial were higher than the clinical on the Clerical scale. These differences accord very well with differences in the practice of the different groups.

The Group Rorschach study of psychologists from 7 universities included 4 subgroups of psychologists: experimental, 25; clinical, 33; social, child, personality, 27; and industrial and statistical, 19. (Roe, 1952.) Comparisons among these groups were difficult because of the difference in amount of knowledge of the Rorschach which had also to be taken into account. Generally, however, it may be said that the differences among the groups are relatively small when compared with other groups. The most characteristic feature in all psychological groups is their marked interest in persons, and clinicians have this to the greatest extreme. The psychologists are more productive than either physical or biological scientists, but this group, unlike the individuals studied, has a somewhat better intellectual control and better general adjustment than the other scientists. It was suggested that this might be an artifact—the test has been developed by psychologists, and interpretation and scoring may well reflect their own personality type as an ideal.

Anthropologists: Research

There were 8 anthropologists in the group of scientists studied individually, averaging 49 years in age. (Roe, 1953.) They are very like the psychologists in most respects, tending to extremer degrees of differences from the other groups. The average economic level of the parental family was higher, and concern with social status was evident in all but one of them. In general family control was likely to be markedly over- or underprotective, and open hostility to the parents is common.

Scores on the Verbal-Spatial-Mathematical Test are:

	Mean	Range
Verbal	61.1	43–72
Spatial	10.9	3–22
Mathematical	9.2	4–13

Two anthropologists declined to take the spatial and mathematical tests on the grounds that they could not do them. Their verbal orientation is confirmed in the findings on imagery, in which, too, they are like the psychologists.

The projective technique results for the anthropologists were very similar to those for the psychologists. Aggression is somewhat freer among the anthropologists and less obviously oral. They show similar conflicts over dominance and authority, but are less concerned with nurturance.

Anthropologists: University faculties

There were 25 anthropologists from 5 universities in the Group Rorschach study (Roe, 1952), and this group has not been subdivided. They are very like the psychologists, and contrast with the other groups of scientists in the same way. They are erratic in succession, casual about form, and have many human movement responses, of which a number are restricted or poor.

Physicians

Level 1 also includes the most responsible practitioners in the sciences. Most physicians belong in this Group, although psychiatrists have been put in Group I in spite of their training, because of the primary importance of the personal relationship with the patient. The available studies in the medical field relate chiefly to students, e.g., Glaser, Stuit, and much work is now in progress. It must be remembered that success as a student is correlated to an unknown degree with success in the profession. In medicine, particularly, this correlation may be somewhat lower than in other professions. It is striking that the sort of person who does well in laboratory courses, and in the basic physical sciences, may not be at all good in the clinical relationship.

LEVEL 2

Dentists

There are a few studies, but only of students. The clinical relation is of less importance in this profession, and results on students may be more significant for professional success than they are for physicians. It would appear that there are the usual correlations between school grades and academic and verbal tests, but there is also some evidence of superior mechanical abilities and interests in this group of students. (Robinson, Roe and Brown, Thompson, 1942, 1944.)

Nurses

There have been a number of studies on nurses. All the interest data agree that they are high on Social Service as well as Scientific interests. This raises some question as to whether they belong in Group II or in this Group. They have been put in this Group, at least for the time being, in view of the fact that their training is more scientific than welfare in nature, and that they are so closely associated with physicians, who have also been assigned to this Group and who are mostly not notable for Social Service interests.

Triggs has studied 826 nurses with the Kuder Preference Record, comparing them with the normative group of 1,429 women-in-general. The nurses differed significantly from the norms in the following ways:

Higher on	Lower on
Social Service	Persuasive
Scientific	Clerical
Artistic	Computational
Musical	Literary

She also found reliable differences between different specialized fields of nursing. The Public Health nurses were significantly higher on the Persuasive and Social Service scales and significantly lower on the Computational and Clerical scales than the others. Nurse educators were lower than all the others on the Persuasive and than all but the Public Health nurses on Clerical; they were higher on Literary than all but the supervisors and the head nurses. On the whole these results make remarkably good sense when one considers just what the differences in the jobs of these different groups of nurses are.

Kaback's study of nurse counselors (1948) reports them superior in intelligence and very superior in mechanical comprehension, average in mechanical ability, and with dominant interests Social Service, Artistic, and Literary. The group tends to be extroverted, dominant, sensitive to the problems of others, well-adjusted, and practical in its problem-solving activities. They give liking for and interest in people as their major reason for selecting nursing as a profession.

There have been a number of studies of nursing students. (Healy and Borg; Bennett and Gordon; Weisberger; Rhinehart; Schmidt.) Generally it may be said that no significant relations have been demonstrated between success in nursing school and such tests as the Bernreuter and MMPI, Moss Social and Moss Nursing Aptitude; GAMIN and STDCR, but it can be predicted with fair success by the usual type of scholastic test. In discussing his results with the MMPI Weisberger points out a problem which recurs repeatedly with all the personality tests. Some of the best nurses had the most elevated profiles and some of the lowest ranking had absolutely unimpeachable profiles:

> A possible explanation of this may lie in the presence of a factor of either control, motivation, or both. It may be that the former [best] group really

possess unfavorable personality tendencies but have the sound motivation and strength of character to control these tendencies, whereas the latter group haven't the motivation or strength of character to make good even with a favorable personality. . . . The apparent anomaly of comparatively unfavorable profiles associated with more than average actual success, as well as the exact reverse of this situation, point to the need of some means of judging the individual's power of control over basic tendencies, or perhaps to a study of motivational factors.

I have made the same point in connection with interpretations of Rorschach protocols of normals.

Petrie and Powell, in a study of 126 nurses in training in England, found some significant (but low, all under .33) correlations between various tests and a rating criterion. After factorization they report that, in addition to "general nursing ability," a good nurse must have high levels of both intellectual capacity and a factor involving personal relationships.

There is one study of biographical factors of nursing candidates. Anderson and McManus reported that the fathers tended to be engaged in trades or manufacturing rather than in professions. This finding is more likely to be associated with Level than with Group in this classification: persons following occupations of Levels 1–2 are more likely to come from professional family backgrounds than otherwise, whereas at Level 3 more nonprofessional backgrounds are encountered.

Pharmacists

Kaback's study of pharmacists (1946) with the Group Rorschach reported that they fell well within the normal range of general adjustment. They were adults of superior intelligence and marked intellectual flexibility but without broad interests. They had generally good control of impulses, but this was rather by conscious repression than a result of inner stability. They showed considerable anxiety, but this was counterbalanced by sensitivity to inner and outer conditions.

LEVEL 4

Embalmer trainees

There is one study of this group.* Wiener and Simon used the MMPI with 36 veterans who had selected this occupation after counseling, and compared them to a control group of 100 other veterans. No strongly deviate personality characteristics were noted among the embalmers, and there was only a moderately elevated hypochondriasis score. Such tendencies as shallow emotionality, feminity, compulsiveness, or necrophilia, which have been suggested as associated with choice of this occupation were not substantiated. It is not clear just why so large a group in one center selected this particular occupation—there may be a school locally situated. (The total number of funeral directors and embalmers in the United States according to the 1940 census was 39,590). It is also possible that those who select this occupation without counseling differ from those who turn to it after counseling.

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* Strong's studies of morticians indicate that they belong with business groups, but he has apparently dealt primarily with owners of funeral parlors. Owners may, of course, derive from the group reported here, but this is uncertain.

There are no studies of occupations at Levels 3, 5, and 6.

Apparently persons selecting these occupations have intelligence test results similar to the average for appropriate Levels. At the highest Levels many have professional family backgrounds, but at others business and nonprofessional backgrounds are commoner. They are generally high in scientific interests, and psychologists, anthropologists, and nurses are high in social interests.

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CHAPTER 19

Group VII Occupations: General Cultural

THE OCCUPATIONS in this Group are most closely related to those in Group I because of the personal interest factor, and to those in Group VIII because of the cultural aspect. Table 19.1 gives a fuller list of the occupations classified in this Group. A number of occupations appear in both Levels 1 and 2. Generally the majority of those following these occupations belong in Level 2, in terms of authority and training.

The MORS patterns indicate that Academic ability is of great importance, throughout, and that Social and Clerical abilities also play some part; Mechanical ability and Physical agility are of no importance.

TABLE 19.1. OCCUPATIONS IN GROUP VII: GENERAL CULTURAL

Level 1

- Editors (e.g., N. Y. Times)
- Educational administrators
- Clergymen, high ranking
- Judges, federal
- Justices, U. S. Supreme Court
- Lawyers, high ranking
- Prophets
- Scholars (creative interpretation)
- University and college faculties

Level 2

- Clergymen, priests, etc.
- Columnists
- Educational administrators
- Editors, average
- News commentators
- Teachers, high school and elementary

Level 3

- Judges, municipal
- Justices of the Peace
- Law clerks
- Librarians
- Radio announcers
- Reporters

There are very few studies of any of this group, except those of teachers and students. Some general data on the Group can be found in Tables 12.3 and 12.5. Graduate and undergraduate students in this Group have about the same averages as for all students, and all reports show that both men and women in these occupations tend to be definitely further toward the feminine end on Masculinity-Femininity tests than the generality for each sex.

LEVEL 2

School principals

The one study of this group was made by Guilford and Comrey and refers to 300 school principals and vice-principals. A personal history blank of 150 multiple choice items was the instrument; each item was correlated with job proficiency as rated by the superintendents. Eight of these items gave significant results in the same direction for at least 2 of the 3 subgroups included. These were:

1. The successful administrator's father had generally employed more than 5 people.
2. Confiding during childhood in mother was not so auspicious as confiding in brother and sister.
3. As a child, the successful administrator was put to bed with medication when ill more often than having the physician called; had only home remedies; was merely kept at home, or had no attention.
4. Belonging to an organized group of children between the ages of 12 and 18 was more favorable than not belonging.
5. Succeeding well in history as a school or college subject was an unfavorable indicator, but succeeding exceptionally well was very good.
6. Succeeding well or exceptionally well in psychology was not desirable for women administrators, but succeeding exceptionally well was significant for men administrators, whereas succeeding only well was bad.
7. Persons who would like to have more than 4 children are not likely to make good administrators.
8. Those in the age range 40 to 50 were more successful than those of 60 and over.

This is a rather disparate group of items, but they can be interpreted clinically. They seem to indicate that identification with the father had been quite successful, at least for the men, and that the women had also tended this way (1 and 2); that they had not been overattached to their mothers (2); and that they got along well with peer groups (2 and 4). Perhaps the item on treatment of illness (3) reflects a general family self-sufficiency and lack of hypochondria which had become internalized by the child. Succeeding in school subjects exceptionally well, rather than just well, could indicate real differences in motivation (5 and 6), but the negative effect of exceptional success in psychology for women only is puzzling. Perhaps marked success in this particular subject is associated with strong motivation resulting from severe personality difficulties. If that is the significance, there seems no reason why it should apply only to women unless item 1 gives the clue. As to item 7, one of Vernon's bi-polar factors is administrative vs. social welfare, persons desiring many children may have more of the latter, because of its association with interest in people for their own sake. As to item 8, it would seem evident that those of approximately equal professional status, but of more years, would appear less successful than the younger persons. With these interpretations in mind, one could take issue with the conclusion of the authors that "the biographical data method has only limited promise of usefulness for the selection of school administrators."

Teachers

There are over one million teachers in the United States. These include almost all the elementary teachers and most of the junior and senior high school teachers (except science, art, and music teachers). There are a large number of studies, both of teachers in practice and of teachers in training.*

Several studies investigating the background of students in training throw some light on reasons for choosing teaching as a career. Although presumably a few of these subjects will not remain in teaching, it is probable that the large majority of them will; it is not easy to change professions after the investment of years of preparation. Prospective teachers tend to come more often from cities than from farms; to have fathers who are likely to be in business or skilled labor rather than in professions; and many have had friends or relatives who were teachers. Their most frequently given motives for entering this profession are: interest in and liking for children; interest in their subject; and security. (Best, Gould, Seagoe, Tudhope.)

The criterion against which to assess the factors involved in pursuing any occupations is always a difficult one. Teaching is no exception. Evans (1951) has made a critical survey of various methods that have been used for assessing teaching ability. The chief ones are pupil achievement, expert opinion, ratings by supervisors, and ratings by pupils. There is apparently very little agreement in estimates made by these different measures. Discrepancies in results of different studies may be related to differences in the choice of the criterion. Evans suggests a composite criterion, but this clearly also introduces difficulties.

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* Because of the large number of these studies not all have been included. Selection is largely on the basis of sample size and relevance. Omitted studies do not differ in any major particular.

Dodge has made two studies of the personality traits of the successful teacher. In both he used a personality inventory. In one, the criterion for separating his subjects into more and less successful is given as supervisor's ratings; no criterion is given in the second study. His subjects were 301 elementary teachers, 266 high school teachers, and 239 Air Corps teachers. He reports the same results in both studies. The more successful represent themselves as:

More at ease socially.
More willing to assume reponsibility.
Less subject to fears and worries.
More sensitive to the opinions of others.
Slower in making decisions.

There are some weaknesses in his handling of the data, but the list of differentiating factors seems to be pretty much a list of factors differentiating more and less mature persons, and to have no information uniquely relevant to this particular occupation.

The same comment can be made about La Rue's study of superior and inferior teachers. The superior rated highest on emotional stability, curiosity, and creativeness, and lowest on fear and distress. The inferior made the highest scores on distress and disgust and lowest on curiosity. It is, however, entirely possible that this occupation, which is preeminently that of preserving and transmitting the basic elements of our cultural heritage, is best performed by those who are in fact best adjusted to that heritage.

Witty's study of teachers as seen by their pupils rather confirms this. He examined two groups of letters written by 14,000 and 33,000 children, in grades 1–12, on the subject "The teacher who has helped me most." The traits mentioned as helpful, in order of frequency, are: (1) cooperative, democratic attitude; (2) kindliness and consideration; (3) patience; (4) wide interests; (5) personal appearance and pleasing manner; (6) fairness and impartiality; (7) sense of humor; (8) good disposition and consistent behavior; (9) interest in pupil's problems; (10) flexibility; (11) use of recognition and praise; (12) unusual proficiency in teaching.

Traits deemed undesirable by the children, usually expressed as "She isn't . . . " are, in order: (1) bad-tempered and intolerant; (2) unfair, has favorites; (3) not interested in pupil or in taking time to help him; (4) unreasonable in demands; (5) tends to be gloomy and unfriendly; (6) sarcastic, uses ridicule; (7) unattractive appearance; (8) impatient and inflexible; (9) tends to talk excessively; (10) inclined to talk down; (11) overbearing and conceited; (12) lacking in humor.

Again the distinction is at least partly one of maturity, but some other characteristics have been added: interest in others, warmth, and skill in teaching (although this seemed least important to them).

Taking a somewhat different and perhaps more fruitful approach, Cook and Leeds have made an apparently successful attempt to measure "the teaching personality," by which they mean the characteristics of the teachers' behavior that are related to the emotional responses of pupils. They developed a scale for measuring teachers' attitudes on the moral status of children (i.e., adherence to adult-imposed standards); on discipline and problems of conduct in the classroom and elsewhere; on principles of child development and behavior; on principles of education; and on their personal reactions, such as likes and dislikes. They found that this scale correlated with rating by principals, by Leeds, and by pupils, +.43, +.49, and +.45, respectively.

Callis had similar results with a scale derived from this attitude scale.

The Strong key for mathematics-science teachers suggests that members of this group have limited intellectual interests, are somewhat masculine, and concentrated on things rather than people.

There are several studies of personality and intellectual differences between teachers of different subjects and at different levels. Powell studied 688 men and 2,785 women applicants for teaching positions in Detroit, 1,570 of whom were experienced. His instruments were: Detroit Advanced Intelligence Test; Detroit Adjustment Inventory Beta; Cooperative General Culture Test (of the ACE); and psychologists' ratings. He found that these teachers formed four general groups:

A. Teachers of foreign languages and English: high on all tests.
B. Early elementary (grades 1–3), home economics, and physical education teachers: low on all tests.
C. Art education and music teachers: low on all but the Fine Arts CGCT subtest.
D. Late elementary (grades 4–6) and special education teachers had the fewest significant differences, and were approximately at the means of the total on all tests.

In addition, teachers of social studies were the lowest on Adjustment; science teachers were the lowest on Literature in the CGCT; and industrial arts teachers were low on most tests, but high on Science and Mathematics. The intelligence and the CGCT subtests were the most differentiating of any of the instruments used; the Adjustment

Test and the psychologists' ratings showed very few significant differences. Those reported above are in keeping with the differences between the actual jobs of the different groups.

Morey studied Strong scores of 340 elementary and high school women teachers, and 340 university women with practice-teaching experience. He found close correspondence among all subgroups; however, the elementary teachers tended to be more feminine, more artistic, and more interested in home and social affairs; the junior high school teachers were primarily efficient organizers, and interested in reform and progress; and the senior high school teachers showed greater intellectual and abstract interests and more independence.

Of the numerous studies of teacher-training students, only a few will be quoted. Evans (1953) made an attempt to study attitude towards teaching (by a specially constructed scale) as a factor in teaching competence, as that was rated by supervisors in five training schools in England. She found no significant correlations between attitude scores and teaching efficiency, nor between intelligence test results and professional competency. In three of the colleges, significant negative correlations were obtained between attitude scores and intelligence, that is, the less intelligent students were more favorably disposed toward teaching. These groups presumably expected to teach in primary or secondary schools.

Schmid made a factorial study of separate groups of men and women teaching students, using variables from several inventories. The patterns were unclear, but it was evident that they were markedly discrepant for men and women.

Nance used three masculinity-femininity tests on 51 men and 51 women teachers' college sophomores, finding both men and women a little more feminine than the published norms for each test.

Journalism

Stone has done a critical review of the literature on the prediction of success in newspaper work. A few studies show some success in predicting scholastic success in schools of journalism, but there are no data on whether or not this has any correspondence with success on the job. Generally, about all that does appear to be significant are motivational factors as these are expressed in intense concentration on the work. This is true in any field.

Magazine editors

With a group of 66 technical magazine editors, Abt used a battery of tests to look for discrimination between good and poor editors, separated on the basis of an Editorial Rating Report. The Otis, Bernreuter, and Moss Social Interest Tests were not effective, but a combination of a Personnel Classification Test, the Michigan Vocabulary Profile and work sample tests did give a significant discrimination. The data are not further analyzed.

Clergymen

Available studies in this field are confined to students and novices. Kimber investigated the students in a Bible Institute with the California Test of Personality, the Minnesota Personality Scale, and the Kuder. He notes that students in the 80 similar institutions in the country are relatively homogeneous in religious interest (i.e., Fundamentalist Protestant), and the curricular and extracurricular life is of an unique sort. He believes that those in his sample are at least equal in intelligence to those in similar institutions. Over four years, the ACE scores for entrants showed the group at approximately the 25th centile, with L almost invariably higher than Q. On the California all had scores below the 50th centile on all subscales except Sense of Personal Worth at the 60th centile and Social Standards at the 65th centile. Other results are shown in Table 19.2. They can be summed up as showing that the students have high social standards, a high

TABLE 19.2. PERSONALITY TRAITS OF BIBLE INSTITUTE STUDENTS (KIMBER)

	Centiles	
	Men	Women
N	50	65
Minnesota Personality Scale		
Morale	75	75
Social adjustment	55	40
Family relations	65	40
Emotionality	50	40
Economic conservatism	55	40
Kuder		
Mechanical	32	55
Computational	32	40
Scientific	38	51
Persuasive	48	28
Artistic	46	56
Literary	69	53
Musical	64	60
Social service	93	80
Clerical	26	33
California		
Total adjustment	40	40
Social adjustment	40	45

sense of personal worth, and a high number of nervous symptoms. Their prevailing interest is in social service.

A study by Cockrum of 93 theological students at the Austin Presbyterian Seminary with the Kuder, GAMIN, and STDCR, gave the results shown in Table 19.3. Fifty-three counseling and 48 education majors are included for comparison. The high and low interests appear the same as those found by Kimber.

TABLE 19.3. PERCENTILE SCORES OF SEMINARY STUDENTS, COMPARED WITH THOSE OF COUNSELING AND EDUCATION MAJORS (COCKRUM)

	Percentiles		
	Seminary	Counseling	Education
Kuder			
Outdoor	58	34	29
Mechanical	31	21	40
Computational	12	28	52
Scientific	21	43	50
Persuasive	47	32	50
Artistic	54	30	49
Literary	57	75	50
Musical	81	65	55
Social service	98	93	60
Clerical	15	25	40
GAMIN			
G	40	40	40
A	59	66	55
M	74	81	76
I	59	72	60
N	59	78	68
STDCR			
S	54	61	
T	41	57	
D	65	80	
C	64	90	
R	47	41	

Johnson used the Bernreuter with 150 students at a Protestant seminary but found no homogeneity among them.

McCarthy studied 229 seminarians at a Catholic institution, using the Bernreuter, Bell, A-V Study of Values, and either Otis or ACE. Additional data were faculty members' ratings on 10 traits such as: external attitude of devotion; promptness in attending spiritual exercises; and manliness. A factor analysis turned up two general factors. The first was identified as schizoid (including 3 measures from the Bernreuter and 5 from the Bell), and the second as general fitness for continuance in seminary life. A slight neurotic tendency, along with self-consciousness and below-average total adjustment, was found. They were more submissive than the average student and at the mean for intelligence. On the A-V they had significantly high religious interests.

Peter's study of 148 novices from several Catholic communities used a controlled interview, Moore's rating scale for prepsychotic traits, a personality rating scale, the ACE, Bernreuter, A-V Values, and the Bell. Using Spearman's procedure the following groups of traits were isolated:

1. Undesirable traits including sulkiness, anxiety, depression, and irritability.
2. A group of traits probably dominated by will, consisting of sense and judgment, capacity to adjust, emotional control, and punctuality.
3. Sociability, including leadership, dominance, and social adjustment.

On the Bernreuter there were no differences from the norm in neurotic tendency, but the novices were lower in self-sufficiency and dominance-submission.

This Group, as a whole, shows some dominance of verbal over nonverbal abilities, a generally more feminine attitude, and some tendencies toward low dominance. In general, the more successful among teachers appear to be the more mature, those who are best adjusted to the prevailing cultural standards. In the religious groups there is a fairly high degree of neuroticism.

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CHAPTER 20

Group VIII Occupations: Arts and Entertainment

THIS GROUP comprises all those concerned with any of the arts, such as music, painting, dancing, and with entertainment, including athletics. Although the special abilities required for different occupations in the Group are not correlated, all are included here. This is because the functions in society of, for example, a painter and a musician are very similar, and the differentiation of the

TABLE 20.1. OCCUPATIONS IN GROUP VIII: ARTS AND ENTERTAINMENT

Level 1

Creative artists: painters, sculptors, writers, composers, choreographers
Museum curators, fine arts
Performers, at highest levels: actors, singers, dancers, concert artists, conductors, directors, athletic champions
Teachers at highest levels

Level 2

Athletes, professional
Athletic coaches
Architects
Art critics
Circus performers
Designers, stage, jewelry
Music arrangers, orchestral
Music critics
Performers, average
Teachers, lower levels

Level 3

Advertising writers
Designers, clothes, millinery, textiles, tapestries, rugs, etc.
Interior decorators
Magicians
Music arrangers, popular
Showmen
Stage designers, lower level
Vaudeville performers

Level 4

Advertising artists
Decorators, window drapers
Illustrators
Monument makers
Photographers
Racing car drivers

Level 5

Animator artists
Illustrators, greeting cards
Photographic technicians
Show card writers, letter cards
Stagehands

highly specialized abilities is of less importance for this type of broad, general classification. Table 20.1 presents the fuller list of occupations that have been placed in this Group.

In general these occupations have made relatively fewer intellectual demands than those in other Groups at the same Levels, but most of them have required superiority in some of the specialized abilities.

LEVELS 1 AND 2

The available studies are of populations usually from both these Levels, and they are therefore put together here. The data on students in these various fields will also be discussed here. It is usually impossible and at the least very inconvenient to separate the material by Levels, and student data are at best suggestive only.

There have been many biographies of great artists, musicians, and others in this Group. Most of the literature on the creative spirit, the nature of the creative process, and so on, has been based upon these great figures of the past. The erroneous (as I believe) assumption that there is a sort of substantive quality, called creativeness, which some men have and some do not, has served to obscure most of the issues involved.

More recently there has been much discussion in the pychoanalytic literature of the motivations of creative artists. These have most often referred to individual painters or to writers. The most general consensus seems to have been that the "creative urge" derives from oedipal problems, (although Bychowski, for example, thinks it may oftener be a reaction to narcissistic impotence). There has been some tendency to generalize this to refer to all creative workers. My own studies demonstrate the very frequent occurrence in one small group of artists (painters) of unresolved oedipal conflicts, and I do not doubt that these are intimately related to the vocation in this Group. It may be that such conflicts are important in other artistic fields, but they appear to be very rare indeed among research scientists.

Artists

Prados studied 20 painters of varied levels, 15 men and 5 women, with the Rorschach. Some of his group apparently belong at this Level and others at lower Levels, but they cannot be separated on his data. He found them a rather homogeneous group, with certain characteristic features. They were superior in intelligence, which emphasizes the abstract forms of thinking, and in logical and constructive activities. They had an obvious disregard for everyday routine problems and a certain fear of mediocrity. They showed a strong drive for achievement and considerable richness of inner interests and spontaneous creative thought. They were also very sensitive and responsive but not very adaptable. The technical data are given in Table 12.6.

My study of painters (Roe, 1946) included 20 American men, selected for their eminence and chosen so that various schools of painting would be represented.* More of them came from socioeconomic extremes than did the scientists, and, although their family background was generally one with high cultural values, these were much more often not of the book-learning type. In addition to interviews I used the Rorschach and TAT. The TAT was difficult to administer because the poor quality of the pictures irritated the subjects. Unlike the group reported by Prados this one was very heterogeneous, and had a very wide range of adjustment levels. The most striking Rorschach finding was that as a group they did not give many of the type of responses classically considered as indicating "creative ability." (For discussion of technical problems here, see Klopfer.) Like Prados' artists, however, they tended to somewhat superior intelligence and to abstract thinking. It was possible to demonstrate some correlations between individual painting style and Rorschach protocols. Both tests indicated a nonaggressive and rather immature type of social and sexual adaptation. There were many indications of insufficient freeing of emotional ties with parents, particularly mothers, and considerable confusion over their own sexual and personal roles. An outstanding characteristic was their consistent pattern of working regular and long hours.

For many years Meier and his students at the University of Iowa have been studying the factors in artistic ability. They consider that six traits are importantly involved, that, given these, artistic production is purely voluntary, but that without them it is impossible. The factors are:

1. Manual skill.
2. Energy output and perseveration.
3. Aesthetic intelligence (spatial and perceptual aptitude).
4. Perceptual facility.

---

* Selection of this group was also affected by amount of drinking, since the primary purpose of this study was to investigate the relation between drinking and creativity in painting. This did not seriously bias the sample for other purposes, so far as I have been able to determine.

5. Creative imagination.
6. Aesthetic judgment.

Measurement of these traits has not been very effective. For one thing, there is no certainty that they are all specific traits, and there are no normative data available if they are. It is not easy to distinguish "perceptual facility" from the ability measured by perceptual aptitude tests. Meier has developed a test of aesthetic judgment, which is extremely interesting and the responses on which are apparently not affected by conventional training in art. The test appears to measure an ability which varies from person to person, but which seems to be related to success in art training. It is not closely related to intelligence and only moderately related to spatial visualization. So far, this test has had no recorded use outside the school situation. Several other art tests have had even less study.

Tiebout and Meier selected 200 artists from the *Biography of American Artists,* and secured the cooperation of 51 of these. They took the Otis, and had an average IQ of 118, with high performance in verbal and spatial items. When they were ranked by two experts for their importance in the field, the correlations with intelligence as measured by the Otis were insignificant, —.13 and +.12.

Artists: Teachers and students

The sparse data on art teachers are parts of other studies, to which reference has already been made. It will be remembered that Powell found art education and music teachers low on intelligence and adjustment tests, and on all but the fine arts subtest of the CGCT; industrial arts teachers were low on everything except science and mathematics.

Bryan and Perl found women students at an art school to be superior to students at music and normal schools in spatial analogies and memory for digits.

Borg used the Kuder Preference Record with 427 students at the California College of Arts and Crafts. These were in three groups: Fine Arts, Commercial Art, and Art-Teaching. On the Kuder Artistic scale the total group of men scored at the 99th percentile and of women at the 98th percentile. There were some significant differences among the three groups:

> The Fine Arts group were higher than the others on the Literary scale and lower than the others on the Persuasive.
>
> The Commercial Arts group were higher than both the others in Mechanical interest, higher than the Fine Arts in Persuasive interests, and higher than the teachers in Science and Clerical.

The Art teachers were higher than the Commercial artists in Music, and higher than both the others in Social Service.

Spaggia used the MMPI in investigating differences between 50 male art students, over 17 years, and 50 nonart subjects randomly selected from the New York area, and matched on age and Otis IQ with the art students. The students had had 2 or more years of training at a recognized art school in New York City. He found that the art students had significantly higher mean scores on: D, Psychopathic Deviate, Interest, Paranoia, Psychasthenia, Schizophrenia, and Hypomania, but not on Hypochondria and Hysteria. In short, art students deviate markedly from others, but the nature of these deviations would suggest that there is no general pattern typical of the art student group, but rather that there may be a few very marked deviants on each subtest (not the same in each instance).

A study of art students by Munsterberg and Mussen is of particular interest. They derived seven hypotheses from the analytic and other literature concerning the temperamental and motivational characteristics of artists. Briefly they concluded that artists handled parental conflict more often by leaving home than nonartists did, and that more artists than nonartists have needs for self-expression, harbor intense guilt feelings, are unwilling or unable to comply with their parents' or society's demands, tend to be introverted and have a rich fantasy life, and emphasize aesthetic rather than material values. Furthermore acceptance of their work is more important to them than is personal acceptance or recognition. In this respect they are like many scientists.

Musicians

The earliest major work in the field of the psychology of music was that of Carl Seashore and his associates, who developed the Seashore Measures of Musical Talent. (There are other tests now with similar purposes, but discussion here is related chiefly to Seashore's tests because these have been the most fully studied and the implications from the others are similar.) Some factors which have been reported as related to achievement in the field of music are of course the same as those needed for achievement in many other fields: manual skill, energy output and perseverance, creative imagination, and emotional sensitivity. Intelligence is apparently increasingly important at the higher levels of performance and composition. The specific capacities measured by Seashore's tests have been shown to be significant for musical occupations, and apparently are of no significance for most other occupations. The separate tests are of capacity to discriminate: Pitch, Loudness, Time, Timbre, Rhythm, and Tonal Memory. Factor analyses have not substantiated Seashore's belief that these subtests are completely independent and basic.

There is one study of the psychological characteristics of student and professional musical composers, made by Gross and Seashore. Their subjects included 10 well-known American composers, and 10 students who were poor and 10 who were good in musical composition, selected from a group of 300. They used the Seashore-Eckerson Recognition of English Vocabulary Test; the Humm-Wadsworth; the Seashore and the Kwalwasser-Dykema Tests of Musical Capacity, and ratings (4-step) of work methods and melodic compositions. They found that:

> By university undergraduate norms the composers averaged at the 9th decile on the vocabulary test, the good students at the 8th, and the inferior students at the 2nd.
>
> On the Humm-Wadsworth all three groups averaged on the border line on the normal component. The composers were +3 on both manic and depressive scales, the good students +3 and +2 on these scales, and the poor students were border line on both.
>
> On the music tests there were moderate but consistent differences, but none were significant.
>
> On ratings of work methods the superior composers were definitely more systematic in spite of their higher ratings on manic and depressive tendencies. (This is another instance of the fact that our tests give us inadequate information of the degree of control of possible neurotic tendencies that the individual can exercise in matters which are important to him.)

Harrower and Cox included six organists in their studies of professional persons with the Rorschach. This group had little tendency to abstract thinking, were not introversive or creative or rigid, and appeared to have fairly good social relations.

Stanton has done extensive work with students at the Eastman School of Music with the Seashore Tests. She found that these scores are not affected by training or experience. Professional and amateur musicians score significantly higher than do beginning students of music and nonmusicians. When these scores are combined with intelligence test scores and teachers' ratings, they give good predictions of success in music school.

Bryan and Perl found students at the Juilliard School of Music superior to art and normal school students in motor speed and memory for words.

Motion picture writers

Metfessel has made an interesting study of motion picture writers. He had as subjects 36 men and 15 women, out of approximately 100 at their level in the studios (salaries $500 to $2,500 per week). He used the Bernreuter and a questionnaire study on their interests, attitudes, and writing habits. He found that as a group they were not greatly different from an unselected group, which he took to be an explanation for their dissatisfaction with the personal adaptation they were forcing themselves to make. Metfessel notes that, compared to directors and actors, they are in a traditionally inferior position. The common generalization that writers tend to be neurotic and introvertive does not apply to studio writers, who are forced to adapt to situations calling for emotional stability, self-sufficiency, extraversion, and dominance. It could, of course, be that those writers who become and remain studio writers are just the ones who are least neurotic. It is interesting, also, to note that these writers were in complete disagreement on the situations in which they did their best work, i.e., variations in pressure, time limits, distractions, etc.

Actors

Fenichel has written a major paper on the psychoanalytic interpretation of acting. His summary of the unconscious aims of acting is as follows:

1. It affords a certain erogenous satisfaction of an exhibitionistic nature. This must remain minimal, or it will disturb the actor's performance.
2. There is direct narcissistic satisfaction from applause, an outwardly provided increase of self-esteem.
3. There is also a narcissistic satisfaction from a sense of magical influence on the audience.

He states that for all artists, especially for actors, the work unconsciously represents an expression of repressed instinctual wishes, derivations of the oedipus complex. The artist induces in his public a participation in the forbidden wishes through acceptance and praise of his work, and this removes or decreases his feelings of guilt about them. Fenichel points out that this works both ways, that the audience needs the actor for the same reason. Stage fright, according to him, occurs when the unconscious emotions of the actor threaten to become conscious.

Chyatte studied 50 professional male actors, matching them by age and Otis IQ with a nonactor group, and using the MMPI. The actors' scores were significantly higher on Psychopathic Deviate, Interest, Paranoia, Schizophrenia, and Hypomania, and significantly lower on Hypochondriasis. We noted that Spiaggia, too, studying art students, found almost identical differences on the MMPI from a nonart group. The art students were also higher in Psychasthenia and D, and lower on Hysteria; otherwise the results are the same.

Wells' study of motion picture actors, which surveys the literature, including biographies, reports that there is general agreement that the essential "traits" for success in the vocation include: concentration, memory of emotion, dramatic action, characterization, observation, and rhythm. These "traits" are unfortunately not now amenable to psychological test. He states also that, unless acting without glamor or financial reward has great appeal, the field should not be entered. (In other words, the motivation must be great and directed towards the activity rather than to the pay. This would be generally true in any field.) Occupational instability is very great at almost any level. In preparation for such a career he considers absorption of details about the industry and self-development in poise and speech to be essential.

Golden studied the personality traits of 80 drama school students by comparing them with the norms on Willoughby, A-V Values, and Neymann-Kohlstedt, and with other college students on a questionnaire. Significant differences were:

> On the A-V, the drama school students scored high in Aesthetic interest but low in Theoretical and Economic.
>
> On the Neymann-Kohlstedt, they showed greater tendency to extroversion.
>
> On the special questionnaire they indicated more "unfortunate family encounters" and more frequently admitted being considered exhibitionists, egotists, queer ducks, etc.
>
> More of the drama students had fathers in professions.
>
> The decision to become an actor was made by 52.5 per cent of them when they came to a "self-realization of talent"; only 12.5 per cent of non-drama students based their choice of vocation on this.

The higher incidence of professional fathers was also found with scientists. This "self-realization of talent" may be analogous to the discovery by scientists of the possibility for personal research, a sort of "*I* can do this."

Athletes: Baseball players

There seem to be very few studies relating to professional athletic occupations. There is a psychological study of professional baseball players, one of champion college athletes, and a sociological study of boxers. There are some studies of personality traits in various physical activity groups, badminton, volley ball, boxing, etc., but these do not refer to occupations.

The study of baseball players was done by LaPlace as his doctoral dissertation. It is based on interviews of most of the major league players (about 400 of them); MMPI's of 51, and data sheets from 69. In addition he studied a class D league in North Carolina with 5 teams tested as groups. From them he secured 64 MMPI's and 70 data sheets.

The major occupations of the fathers or guardians of the players are given in Table 20.2. None was extremely poor, nor were any

TABLE 20.2. OCCUPATIONS OF FATHERS OR GUARDIANS OF BASEBALL PLAYERS (FROM LAPLACE)

	Major League		Minor League	
Father's Occupation	*N*	%	*N*	%
Agriculture	10	14.4	16	22.8
Mining	3	4.3	2	2.8
Mechanical (including factory)	21	30.4	28	39.9
Clerical and sales	3	4.3	2	2.8
Executive and managerial	9	13.0	4	5.7
Professional	2	2.8	1	1.4
Other	19	27.5	16	22.8
Not given	2	1.4	1	1.4
	69		70	

very well-off. His categorizations make summary difficult; perhaps the most evident point is that they tended to come from blue-collar rather than white collar groups. In this respect they differ markedly from most Level 2 occupations in other Groups. Additional biographical data are:

> The minor league players more often came from broken homes than did the population at large.
>
> Both major and minor league players came from larger than usual families, and less often from rural areas.
>
> Major league players began playing earlier than minor league players, and they played more of the other sports, chiefly basketball.

His MMPI data are summed up in Table 20.3. The major and minor league players differ only on the Psychopathic Deviate and Schizophrenia scales, i.e., the major leaguers are more self-disciplined and more social than the minor leaguers. In comparison with normal

TABLE 20.3. RESULTS ON MMPI FOR 49 MAJOR AND 44 MINOR LEAGUE BASEBALL PLAYERS (FROM LAPLACE)

		Means		Comparisons, P Values[a]		
				Major-Minor	Norms	
Scale	Norms	Major	Minor		Major	Minor
Hypochondria	4.5	3.9	5.0			
Depression	16.7	18.0	17.8		.01	
Hysteria	16.5	18.4	18.3		.01	.01
Psychopathic deviate	14.0	15.0	16.7	.025		.01
Interest, M-F	20.5	21.8	23.1		.01	.01
Paranoia	8.0	8.8	9.2			.01
Psychasthenia	10.0	9.8	11.3			
Schizophrenia	9.5	7.6	11.6	.01	.02	
Hypomania	14.0	17.2	17.7		.01	.01

[a] Only significant differences are entered.

groups, major league players appear to have stronger drive, which is expressed as ambitiousness, aggressiveness, and vigorousness. In addition they have a considerable degree of self-discipline, and above-average ability to get along well with other people. We have already discussed strong drive as being a major factor in success at the higher Levels; it appears in every group which has been well studied.

Athletes: Boxers

Weinberg and Arond in their study of boxers point out that these men are recruited from even lower socioeconomic levels than are baseball players. "Successful amateur and professional boxers furnish highly visible role models to the boys of the slums." Both occupations provide a relatively quick ascent at a relatively young age, and to the successful bring money and prestige, and avoidance of unskilled and disagreeable work. The boxer, however, is more likely to have an even quicker descent. Whereas the majority of big league players manage during their careers to get well started in some business or other occupation, boxers, in part because of the system which in effect makes them dependent upon their managers, rarely succeed in establishing themselves for life. Of 2,831 boxers listed in 1950, only 11 per cent were headliners. The later careers of 95 leading former boxers, each of whom had earned over $100,000 during his boxing career, are as follows:

18 remained as trainers or trainer-managers.
2 became wrestlers.

26 worked in, fronted for, or owned taverns.
2 were liquor salesmen.
18 held unskilled jobs (usually in steel mills).
6 went into the movies.
5 became entertainers.
2 owned or worked in gas stations.
3 were cab drivers.
3 had newsstands.
2 worked as janitors.
3 were bookies.
3 had race track jobs.
2 were in business (unspecified).

Athletes: College champions

Johnson, Hutton, and Johnson have reported briefly on Rorschach and H-T-P tests of 12 national champions or All-Americans, including 4 football players, 2 Lacrosse players, 2 wrestlers, 2 boxers, 1 track man, and 1 rifle marksman. Two evaluators who were not aware of the nature of the study agreed on the following as outstanding personality characteristics of the group:

1. Extreme aggression.
2. Uncontrolled affect.
3. High and generalized anxiety.
4. High level of intellectual aspiration.
5. Exceptional feelings of self-assurance.
6. Ability to concentrate personality resources upon the desired objectives.
7. Unusual concern for physical power and physical perfection.

The authors suggest that, in these subjects, being a champion was a matter of psychological necessity.

LEVEL 3

Commercial artists

A few data are available for this occupation from the studies of Steiner and of Harrower and Cox. Groups are very small, and sampling details not known. The technical data are given in Table 12.6. These agree with other studies of artists, reported above, in finding them high in abstract thinking, and they agree with Prados in finding that they use many human movement responses. Harrower and

Cox also found them high in controlled emotional adaptability and in general energy.

Generally, persons in this Group (possibly excepting musicians) have a narcissistic orientation with frequent neurotic problems. Among the arts groups there is a strong tendency to femininity, and oedipal problems are common. The athletic groups tend to masculinity. Intellectual interests are not high in any of them.

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PART

IV

Following an Occupation

21. Studies of Occupational Choice

22. Progress in the Occupation

23. The Effect of the Occupation on Other Aspects of Living

CHAPTER 21

Studies of Occupational Choice

We have discussed, in earlier chapters, the general role of the occupation in the life of the individual, differences in individual abilities, interests, and backgrounds, and differences in occupations and in the patterns of abilities and interests found in people following different occupations. Now we turn to the questions of choosing and pursuing an occupation, and what effect this has on the rest of one's life.

We have no institutional structures facilitating occupational choice. In 1944, after a survey of the literature, Carter remarked:

> . . . there have been repeated and many-sided studies supporting the conclusion that undue optimism characterizes the vocational ambitions of young persons and that the processes of education and vocational adjustment in early adult life include, as no small component, a series of adjustments to reality which require lowering of aspiration levels and undoubtedly involve disillusionment, discouragement and emotional malady.

In this chapter we shall review studies of occupational choice. We need first to define what is meant by choice. Do we mean what a person would most like to do, assuming that he had the capacities, training, and opportunity? Do we mean what he will try to do? Or do we mean what he actually does come to do? To some extent the meaning of the word changes with the age or life period with which we are concerned. With small children, "choice" of an occupation means something quite different from what it means even in high school, and choice means something else again when one is actually faced with the necessity for taking a job. We might reserve the term preference for all stages up to the final one of actually entering upon an occupation. Even then we must consider that sometimes a particular job is intended only as a stopgap or as a means to an end. Whether it eventually becomes a dead end or really is only a stopgap is still another problem.

Perhaps one way of approaching the problem is to think of what might be an ideal situation. If we were writing a science fiction story of life on another planet, and we wanted to picture a society in which people and their occupations would be ideally matched, and also ideally fitted into the social order, what would be the necessary conditions? We shall assume that the inhabitants of this planet are basically human, that they vary in capacities and interests, and that different occupations have different requirements. Perhaps, to simplify the problem, we might also assume, this being an ideal society, that there are no social or racial barriers to entrance into any occupation. What else would we have to assume in order to bring it about that every individual in the culture could find an occupation which was suited to him, for which he was suited, and in which he could achieve satisfaction of basic needs? We need not assume that the occupation must satisfy all his basic needs.

We would have to make quite a few further assumptions about the nature of the society. It would have to include a wide range of possible occupations, and a reasonable balancing of them with respect to the total capacities of the population. It would have to be a society in which the dull, uninteresting, personally unrewarding jobs were minimized, and even then those which remained would have to be differently structured and allocated, perhaps rotated in some way. It would have to be a society with extremely broad tolerance for individual variations. It would also have to be a society which permitted or encouraged some experimentation, and considerable mobility, geographical and otherwise. It would also have to be one in which education was available in varied forms and without restriction. There would also have to be, either as part of the educational process, or otherwise, some means for acquainting everyone in the culture with at least the major features of every available type of occupation, the requirements for it, and even more important the subtle features which would determine the potentialities for satisfyingness to different kinds of persons.

With respect to the individual we would also have to assume that he knows himself, at least that the process of growing up includes much more development of full, conscious awareness of himself and his needs and primary satisfiers than our society has even dreamed of providing. This means not only that he must develop a self-concept in accord with reality but that it must be acceptable to him as well as known to him.

Perhaps, then, if all these things were true, and doubtless others we have not thought of, it would be possible for each person finally to make an appropriate selection of occupation. Putting the problem in this form illuminates many phases of it. There is no society on earth today, or likely to be in the near future, which even approximates these conditions. There is none in which occupational knowledge and unrestricted training are available to anyone, let alone everyone. Even more important, there is none in which the development of mature self-knowledge and self-acceptance is a matter of direct concern to the society, none, in fact, in which this is not achieved in spite of social pressures when it is achieved at all.

Even though it is obvious that there are many more occupations unsuitable to one person than suitable to him, it is still true that everyone has the potential for success and satisfaction in a number of occupations or in a number of positions. Social, racial, and other factors still limit educational as well as occupational freedom, but this is becoming increasingly less so, and presumably the trend will continue.

It is true, as Ginzberg and his associates have emphasized, that there are irreversible elements: one type of education cannot be exchanged for another in retrospect; time spent on one job means that there is that much less time to spend on another, and so on. Nevertheless both individuals and society are more flexible than Ginzberg seems to consider them. Individual occupational histories show shifts. Some of these may seem minor at the time, but they may mean personally significant changes, even within the framework of a superficially similar job, that lead to more congenial activities. The same job is rarely done in the same way by two different persons, and most jobs other than fully routinized assembly line or clerical ones, can be approached in different ways, or organized somewhat differently in accordance with individual peculiarities. They not only can be, they inevitably will be. Sometimes this is satisfactory all around; sometimes the worker finds that it is impossible to find satisfaction in one job, however he alters it, and will, if he can, find another. Sometimes, of course, he will be fired. People are not static, and Super's emphasis on the importance of the career pattern as a whole for understanding the vocational life of any one individual is a very important one. Forer has pointed out the role of unconscious elements in occupational choice.

What actually happens in getting into an occupation, how preferences change with age, and how they are affected by other factors have been the object of a large number of studies. It is important to keep in mind that getting into an occupation is an ongoing process.

STUDIES OF OCCUPATIONAL PREFERENCE AT THE ELEMENTARY AND HIGH SCHOOL LEVELS

A number of studies have been made, many of them with very large samples. Most of them are questionnaires, some multiple-choice, some open-ended, some requiring first and second preferences, or some other subdivision such as probable, possible, and favorite occupations. Many have asked for reasons for the preferences. Results may be compared with census distributions. These show, without exception, that more persons at all ages and of both sexes name professional-technical occupations, and fewer name agricultural and domestic occupations than are proportionately engaged in these occupations at the time. The number actually engaged in work is probably a fair estimate of the number that the social structure will support at the time, except where entry into an occupation is very rigidly controlled by the profession, as with medicine now.

Dresden has warned against too literal interpretation of questionnaire surveys of secondary school pupils. She feels that the true vocational goals are more likely to be closer to the students' abilities than they are willing to record on a questionnaire. She points out that most high school orientation talks on vocations deal chiefly with upper level occupations. Parents at lower occupational levels generally did not go to high school themselves, so that if the children go they, and their parents, are probably aiming higher. This may account for some of the discrepancies reported between vocational aims and numbers of jobs available.

Lehman and Witty (1936) gave a Vocational Attitude quiz to 26,878 school children, aged 8.5 to 18.5. In a list of 200 occupations the children checked those which they would be willing to engage in as a life work. They also indicated the three they would like best to follow; the one they were most likely to follow; the three they believed the best money-makers; the three they believed the most respected, and the three they believed would require the least effort. Physicians, bankers, and ministers were indicated, in that order, as the most respected occupations. Both sexes and all ages made their choices for the following reasons, in order: money; social approval; and easy life. There were marked sex differences in kinds of preferences, as shown in the table on page 255.

Boys more often preferred occupations involving giving commands, and their attitudes changed more with age than did those of girls.

Boynton, studying 796 girls and 765 boys in grades 1–6 (ages 6–16)

	Percentage Preference	
Nature of Occupation	Boys	Girls
Sedentary		90
Travel or movement	45	15
Aesthetic	15	50
Personal service	1	6
Teaching	0	4

with an open-ended questionnaire, stated that generally children's occupational interests do not grow or develop or systematically change within the years studied; that economic security or insecurity is not causally related to their occupational preferences; that educational maturity has a very equivocal relationship with professional interests; and that the apparent sex differences are artifacts of a system of social training.

Menger studied 9,425 boys and 9,374 girls in grades 3–16 in various eastern schools, in both urban and rural communities. He found some regular trends in the answers to: "When you finish school, what vocation do you expect to follow?" The boys in both elementary and high schools mentioned 70 occupations, but in college only 37 were named. For girls the figures were 35, 39, and 40, which he interpreted as meaning that education to some extent widened vocational horizons for girls but not for boys. There was little difference between rural and urban groups except for a higher frequency of farming and nursing in the rural. Excessive numbers choosing professions were reported, as usual.

Studies in other countries are apparently not comparable. (Gentzkow, Hochholzer, Rieffel.)

One of the most complete studies is that by Byrns. His sample included 42,479 girls and 34,472 boys in Wisconsin senior high schools. His study includes data from intelligence tests as well as census comparisons. He gives median percentile rank in intelligence for those selecting each occupation (boys and girls separately); these run from 87.9 for writing to 30.0 for dairying for the boys. The overlap is very great, but the general rank order is similar to those for persons already in these occupations. Boys named more occupations than girls did, and there was the usual overselection of professional occupations compared to the numbers so employed in Wisconsin.

The situation in Hawaii is very similar. Livesay reported a study of 2,255 high school seniors, for whom he had ACE scores. Only 1,272 could give vocational preferences. He found some relationship between intelligence test scores and desired occupations, but the ranges were so wide that a large proportion would certainly not qualify for their selected occupations.

Several studies have been designed to investigate the relation between expectation and fantasy in the matter of vocational preference. Freeston asked 100 children, aged 5–13, to write reports of what they were going to try to become, and to draw themselves as they hoped to be when grown-up. These two types of reports were inconsistent in one-third to one-half of the cases at different ages. He classified their proclaimed ambitions as possible, unlikely, and impossible, and found that, at age 8, 82 per cent chose possible occupations, but that, at age 14, only 50 per cent did. He considered this explicable as a desire for adventure and escape from humdrum work (school?). He also noted that the duller and less imaginative tended to make fewer impossible selections. Boys were most influenced by sports heroes, girls by the cinema.

Trow's study is somewhat clearer. He asked 161 boys and 169 girls, in grades 8, 10, and 12, to indicate what vocations they considered to be for themselves: (1) probable; (2) possible; and (3) favorite fantasy. He compared the results with the census data for their city (Detroit). The data are given in Table 21.1. For almost half these subjects there was no discrepancy between what they would probably do and what they would like to do, and he concluded that the children are on the whole realistic in their vocational outlook and generally satisfied with their occupational possibilities. It should be noted, however, that considerable discrepancy occurs between census data and probable choices in two classes of occupations: manufacturing and professional service.

Carp's study of vocational preference, related to parental occupation

TABLE 21.1. COMPARISON OF OCCUPATIONAL CHOICES WITH 1930 CENSUS CLASSIFICATION, IN PERCENTAGE (FROM TROW)

Classification	Detroit Census	Choices: Probable	Possible	Fantasy
Agriculture	0.3	0.0	0.0	0.3
Forestry, fishing	0.0	0.0	0.3	0.0
Extraction of minerals	0.1	0.0	0.0	0.0
Manufacturing	48.5	5.2	8.0	0.6
Transportation, communication	6.9	2.7	5.4	6.0
Trade	13.9	12.1	7.0	5.8
Public service	2.4	1.8	2.7	3.3
Professional service	6.2	32.7	50.9	42.4
Domestic, personal service	10.4	0.9	2.1	1.5
Clerical	11.3	27.0	14.5	3.3

and family background, included 165 boys, 14 to 18 years, in high school. The modal occupational level for both desired and expected occupations was about at the level of both fathers and grandfathers; she therefore concluded that the boys were realistic about their expectations.

There are two approaches to the problem of reasons for stated preferences. One inquires what there is about the vocation that appeals to the subject; the other, what influences, usually personal, have impelled him to the choice.

Table 21.2 shows the results of several studies from the latter point of view. Peters' sample included over 700 high school seniors in Missouri. The rank order of the most influential factors in their selections is given in the table: ranks 2 through 5 are within 1 per cent of each other. Kaplan's sample consisted of 282 replies to a questionnaire sent to graduates of the University of Idaho (included in this section for convenience). Endicott studied 543 boys and 580 girls in high school.

TABLE 21.2. INFLUENCES AFFECTING VOCATIONAL CHOICE; RANK ORDER (COMPILED FROM PETERS; ENDICOTT; KAPLAN)

	Rank Order				
			Endicott		
Influences	Peters	Kaplan	Boys	Girls	Both
Parents	1	2	3	1	1
Other relatives	4				
Friends or other students	2		7	7	7
Teachers	3	5	6	5	6
People in the vocation		3	1	2	2
Books or magazines			2	6	3
Own abilities			4	4	4
School subjects		1	5	3	5
Tried and liked		4			
Best school marks			8	8	8

Edmiston and Starr have made the other approach. They studied 443 boys and 575 girls, grades 7–12, in country, village, and city schools in Ohio. They used a questionnaire covering 27 factors which might affect choice of vocation. Each factor had 3 subdivisions, one of which was to be checked. This was intended to indicate the importance of that factor to the child, but it is not certain that the subdivisions are adequately chosen for this purpose. The relative importance of these general factors for boys and girls and for both is shown in Table 21.3.

TABLE 21.3. RELATIVE IMPORTANCE OF VARIOUS FACTORS INFLUENCING VOCATIONAL CHOICE (FROM EDMISTON AND STARR)

Factor	Rank Order Boys	 Girls	 Both
I. Prestige	8.5	5	7
II. Economic	2	3	3
III. Effort	8.5	7	8
IV. Social	3	2	2
V. Security	1	1	1
VI. Aesthetic	6	8	6
VII. Requirements	4	4	4
VIII. Glamor	7	9	9
IX. Ability	5	6	5

Fleege and Malone have also studied motivation among junior-senior high school students, by analyzing compositions on the subject "What I want to be when I leave school after the war and why I chose this occupation." Their sample included 311 girls and 222 boys. They made the usual observation, that a large percentage named occupations beyond their mental capacities. The expressed motives appeared to change little from grade to grade, and, for any particular occupational preference, showed no relationship to range of IQ. Their classification of motives is in rather odd terms: religious; superior natural (i.e., parental, filial, fraternal, or romantic love); other unselfish natural, (i.e., to help mankind); selfish natural (i.e., interest in work, desire for independence!); and no motive. Ignoring the classification, however, the motives given most frequently are, in order: interest in work; to help mankind; personal advancement; aptitude for the work; adventure; occupation of family members; favorable work conditions.

Somewhat closer to the workaday world is Valentine's report that among technical school boys, aged 14 to 17, the first choice of work is usually not based on judgment of suitability but is almost entirely a matter of opportunity and convenience. Reynolds' studies of manual workers are in accord with this.

The report by Hurlock and Jansing indicated that both boys and girls gave liking for the work as first reason for their preference, that boys gave money as the second, and girls that they were fitted for it. Over two-thirds expected to be able to follow their first preference; the chief reason given for not expecting to follow it was impossibility. They added that parents were equally interested in the vocations of sons and daughters, and that when they disagreed with the son's choice the reason was most often money, but when they disagreed with the daughter's it was most often on the ground that the girl was better fitted for some other vocation. Such reasons are frequently "covers" for more basic attitudes. It was noticed in the study of artists that parents often gave economic reasons as the basis for an objection to this vocation, when the objection was really for other reasons.

Changes with age

Changes in interest scores with age have been studied fairly extensively and were discussed in Chapter 7. It will be remembered that age differences are not very great, that interests are fairly well crystallized by age 18, and that very few changes take place after 25. Changes in vocational preferences, as expressed on questionnaires, or in choices, as expressed by taking jobs, have not frequently been studied longitudinally. This is, in part, what Super and his group have been doing in their investigations of career patterns, and it should be of considerable interest.

The studies just reported, of tabulated preferences of large numbers of students from elementary grades through high school, do show some changes. Lehman and Witty pointed out certain changes that they thought paralleled physiological maturation (which might include for boys somewhat decreased interest in sheer physical activity), but these changes can equally well be explained as increased comprehension of the prestige values of different occupations. In any event there is some evidence that such changes are not very great after about 18, thus paralleling the results of interest tests.

Minority group position and occupational preference

Some discussion of the differences in occupations open to members of minority groups was given in Chapter 8. There are also differences in choice of occupation associated with minority group membership.

A comparison of Negro children, in grades 1–6 in 3 southern schools, with white children is reported by Gray. The preferences of the Negro girls were essentially similar to those of the white girls, with emphasis on semi-professional occupations. The Negro boys differed from the whites in showing more interest in a few professional occupations. For the entire group (797 Negroes) the median occupational level selected by the Negroes was almost 1 point higher than that chosen by the whites on a 5-point scale. The choices were very limited, and became slightly less realistic with increased age. This may be overcompensation for a minority position, which becomes more acutely realized, the hope being that occupational prestige would help overcome the racial disadvantage.

This pattern is characteristic of minority groups in other countries also. Bernstein has reported a study of over 400 school children in Poland, finding that the children avoided choosing the occupation of their parents. The tendency to select intellectual occupations rather than commerce or farming was also quite marked among all the children of his group but especially so among the Jewish children. He considered this compensatory.

Witty, Garfield, and Brink made a comparison of vocational interests of urban white and colored students, reporting little change from a similar study made by Lehman and Witty 10 years earlier. Forty-four per cent of the white and 65 per cent of the colored pupils expected to go to college. They noted the usual concentration of interests in a small number of highly competitive occupations. Data are given in Table 21.4.

TABLE 21.4. A COMPARISON OF THE VOCATIONAL INTERESTS OF NEGRO AND WHITE HIGH SCHOOL STUDENTS[a] (FROM WITTY, GARFIELD, AND BRINK)

Boys		
	White	Negro
Total number	334	405
	%	%
Engineer	25.8	10.8
Aviator	21.2	9.8
Mechanic-machinist	11.0	6.9
Lawyer	5.9	12.0
Medicine-surgery	4.7	13.3
Music	2.0	15.0
Postal work	1.1	21.9
Girls		
	White	Negro
Total number	366	579
	%	%
Office and clerical	50.0	38.5
Nursing	22.6	27.6
Teaching	20.4	31.9
Designing	14.4	5.3
Beautician	11.7	11.5
Journalism	10.9	0.6
Social work	1.9	10.3

[a] Occupations chosen by over 10 per cent.

Lawrence has reported on Negro boys in the 10th grade in 13 California high schools. He, too, found that many aspired to professional status (and prestige), which was unrealistic for most because of the paucity of job opportunities and the unavailability of training. This was not completely unrecognized by the boys, however, since only 50 per cent indicated any real hope of attaining their goal. (It might then be questioned whether it was in fact a goal or should be classified as a fantasy.) The figures for the percentage aspiring to different occupational groups and the percentage of Negroes in the state now working at these occupations are given in Table 21.5.

TABLE 21.5. VOCATIONAL CHOICES COMPARED WITH VOCATIONAL DISTRIBUTION OF NEGROES IN CALIFORNIA (FROM LAWRENCE)

	Percentage	
Occupation	Aspiring	Employed
Professional, semi-professional	39.1	3.7
Proprietor, manager, farm owner	4.9	3.1
Clerical, etc.	19.1	4.4
Crafts	9.2	3.9
Operatives	5.5	9.0
Protective services	0.0	1.2
Service and domestic	6.4	60.2
Laborers, including farm	0.4	13.9
Not classified	15.4	0.6

The figures reported by Hyte from an earlier study are similar to those already reviewed. Of 1,218 Negro high school students, 69.5 per cent expected to attend college; 68.6 per cent claimed to have made a definite occupational choice, and of these three-fourths had chosen a profession. Their reasons were:

	%
Interest or liking for the work	50
Aptitude or fitness	20
Good money	13
Desire to enter uncrowded field	6

It should be pointed out that some of the discrepancy in figures of Negro and white high school students who expect to enter college is due to the much higher selection of Negroes who reach high school. For example, 12 per cent of those in Hyte's group were children of professional men. There is much more weeding out of Negroes all along the line in school attendance. Even where decent schools are available for them the problem is partly a matter of economics: family incomes are lower, and the children must go to work sooner. It is also partly a matter of social pressures: education must be more highly valued at each level for Negroes to continue with it. Even in the best, unsegregated, and most liberal school they are still disadvantaged.

Faw, studying high school boys in Chicago, points out that there are similarities among those who share common attitudes and values, and differences among those who participate in different groups. He felt that, if Negroes were allowed unrestricted entry to occupations, the probability of their achieving job satisfaction would be much higher, and the probability of the competing whites achieving satisfaction would be only slightly decreased. He also found significant differences in different religious groups. More Protestants than Catholics and more Catholics than Jews chose skilled, semi-skilled, and unskilled jobs. More Catholics were interested in managerial jobs than either Jews or Protestants, and their interest in such jobs was greater than their interest in professional jobs. (It has already been pointed out that Catholics enter scientific professions relatively rarely.) More Catholics than Protestants were interested in clerical and sales jobs. The Protestants were more interested in professional than in managerial jobs.

Occupational preferences and family background

This has already been discussed, but some further studies should be considered. Boynton and Woolwine studied 2,361 high school girls, 13–19 years old, from the South and the Southeast. They divided them into four economic groups. The most popular occupations among all groups (including 87 per cent of first preferences) were: stenography, nursing, teaching, marriage, beauty parlor, clerical, music, dietetics, journalism, medicine, commercial art, dress designing, air stewardess. However, 84 per cent of the girls in the lowest economic group gave first preference to one of the first seven of these occupations, and only 57 per cent of the girls in the highest

TABLE 21.6. VOCATIONAL CHOICE AND PARENTAL CLASS (FROM HOLLINGSHEAD)

	Father's Occupation, Taussig Class, %			
Vocational Aim	I, II	III	IV	V
Professional, business	77	36	23	7
Farmer	12	11	6	3
Clerical	5	20	20	10
Craftsman	3	12	18	14
Service trades, miscellaneous	0	8	13	25
Undecided	3	13	20	41

economic group did. For the last six occupations the preferences were 4 per cent and 23 per cent. They also noted a progressive increase in interest in marriage (at least in expressed interest) from the lowest to the highest economic class.

In his study *Elmtown's Youth,* Hollingshead noted differences in job preferences associated with father's class. His data are given in Table 21.6. It can be seen that preference is very much affected by father's position.

Occupational preference and interest tests

Carter, Taylor, and Canning reported on relations between the Strong and the expressed vocational preferences of high school boys and girls in grades 10, 11, and 12. In all of them, the students receive a significantly higher percentage of A and B ratings on scales which are appropriate to their vocational choice, the relation being somewhat higher for girls.

Kopp and Tussing studied 280 high school boys and 326 girls. The Kuder was used for one class, and the Cleeton Vocational Interest Inventory for two others. On the Kuder the relationship between preference and test was +.50 for girls and +.59 for boys; on the Cleeton, for girls in two classes it was +.36 and +.53, and for boys +.44 and +.50. This is as high a relationship as can be expected in the light of the numerous other factors involved.

Occupational preference and adjustment

Small has made an intensive clinical study of a group of adolescents at a Vocational Advisory Service. His chief interest was a comparison of the vocational choices made by adjusted adolescent boys with those of adolescents who were disturbed. His technique was an analysis of the reality-and-fantasy contents of their choices. His disturbed group were from psychiatric hospitals and clinics, and his comparison group from schools and similar sources. At each age group, from 15 through 19 inclusive, he had 10 subjects, 8 white and 2 Negro. The religious distributions were, for all: 5 Catholic, 3 Protestant, and 2 Jewish. All were native-born Americans of lower middle class economic background. Subjects were matched on age, religion, race, and economic status, but not on education or intelligence. The mean IQ of the comparison group was 112.1, and of the disturbed group 102.2. His major conclusions were:

1. The vocational choices of better-adjusted boys are more realistic than those of disturbed boys.
2. The second vocational choice of better-adjusted boys is *less* realistic

than their first choice; whereas the second choice of disturbed boys tends to be *more* realistic than their first choice.

3. The vocational choices of better-adjusted boys are characterized by fantasies that emphasize participation in and involvement with the environment and its inhabitants and objects. The vocational choices of disturbed boys are characterized by fantasies that emphasize removal from others and the environment, self-depreciation, and the acting out of impulses.

These findings support our hypothesis that individuals with different ego strengths will show differences in the role played by reality and fantasy in the making of their vocational choices.

Other findings suggest, but do not show conclusively, that adequacy of ego function may be related to:

1. Consistency in vocational choices—the making of similar vocational choices.
2. Level of functioning intelligence—measurements of intelligence by tests.
3. Homogeneity of functioning intelligence—consistency of performance in the various functions measured by tests.
4. Recognition of realistic opportunities for need-satisfactions—expecting similar satisfactions in similar situations and different satisfactions in different situations.

This type of study is of particular value both for its implications for theory and for its implications for counseling. These findings do not support Ginzberg's theory that vocational choices are made with greater realism with advancing age; instead, they show that reality factors and fantasy drives operated simultaneously at all the ages studied. Small believes that a theory of vocational choice determination must take account of ego strength. If this could be held constant it would be possible to test the relative importance of such other factors as interests, aptitudes, family influence, and so on, with more validity.

STUDIES OF COLLEGE STUDENTS AND OTHER ADULTS

Studies of college students have been separated from those previously reported, since the choice situation is very different at this stage than it is at high school. College students are already a highly selected group, and very, very few of them will wind up in the lower level occupations.

Various studies (Caudill, Achilles, Dyer) indicate that from 53 to 70 per cent of college students had decided upon a vocation before entering college. Achilles also reported that, of those who had made a decision before going to college, one-third selected the particular college because of their occupational choice. Most of those undecided when they entered college had made a choice by their junior year.

Whether or not such choices are actually carried out, however, is another matter. Dyer has contributed a very interesting study of this point. In 1924 he interviewed 101 students at the University of Kansas to determine the time and circumstances under which they had chosen a vocation. He had them list second, third, and fourth choices also, and asked how they would revise their choice if they suddenly acquired $100,000 (81 per cent said they would not change). He followed this group up five years later, and again five years after that. Five years later, 82 of his 101 boys had entered upon their first choices, and 79 were still engaged in those occupations; 10 had started in their second choice, and 9 were still engaged in it. Time of choice, influences, and permanence of these are indicated in Table 21.7. There is some indication that, the earlier the choice and the closer to personal or family preoccupations, the more likely it is to be established.

TABLE 21.7. SOURCES AND PERMANENCE OF VOCATIONAL INTERESTS OF 101 COLLEGE MEN (FROM DYER, 1932)

Time of Choice and Permanence

		Remaining	
Time of Choice	Choosing, N	N	%
Before high school	32	29	90
In high school	28	21	75
In college	37	25	68
On the job	2		
Uncertain	2		

Sources and Permanence

		Remaining	
Source	Choosing, N	N	%
Family situation or tradition	31	26	84
Development of boyhood occupation	14	12	86
Development of hobby	10	9	90
Influence of teacher, in or out of class	12	9	75
Formal counsel, any source	9	6	67
Scattered	10		
Don't know	15	6	60

For entering freshmen, Sisson (1941) noted considerable differences in vocational choice according to whether the student came from a city, town, or farm. Fewer students from farms had by then made a choice, and after one year 26 per cent of the farm group had changed their plans; the percentages were 19 for the city group and 20 for the town group. His data do not show how great these shifts actually were.

It is also Sisson (1937) who has pointed out that the number of entering college students planning to go into professions is, as for high school and elementary students, higher than the number of openings. At Wesleyan, for example, in the junior year 28 per cent of the students planned to go into medicine, law, or teaching (for entering students the figure was 54 per cent); only 17 per cent of earlier classes have actually done so. About 34 per cent of earlier classes had gone into business, but only 11 per cent were planning to do so.

Fitchett's study of occupational preferences and opportunities of Negro college students would indicate that the situation is very similar to that for Negro high school students in the great restriction of vocations that are considered.

Two studies, investigating the possibility that college students who had already chosen a vocation make higher grades than those who have not, have given conflicting results. (Williamson, Achilles.)

Several studies of veterans have indicated that, with these presumably maturer groups, the overselection of professions also occurs. (Wilson, Kohn, Stubbins.) Stubbins found no relationship between appropriate or unrealistic choices and age, father's occupational level, number of older brothers, marital status, or work experience. There was some indication that those with more education made more appropriate choices, and that veterans receiving disability pensions were relatively more realistic than the nondisabled.

It would seem quite plausible that the influences and motivations affecting choice at the professional level might differ from those affecting choice at other levels. One study has investigated this possibility. Norton and Kuhlen interviewed 75 male teachers, 75 female teachers, and 43 factory workers, then 28 to 40 years old. They asked for vocational histories (preferences as well as jobs held) dating from the earliest recollections. The interviews began in a relatively unstructured fashion, with more direct questions being asked later to check particular statements. One-fourth were electrically recorded, as a check on accuracy. Their conclusions are as follows:

1. Women's interests in childhood and adolescence are more homogeneous and less variable than men's.
2. Factory workers show marked vocational apathy, have relatively few

interests, with relatively late emergence of any interest and little direction beyond "*some* job."

3. For the total group of 193 subjects the motivations were ranked: self-expression, status, association with people, money and security, variety in work, helping others.
4. The importance of external influences in shaping interests were (in descending order) family, school, availability of finances, early extended contact with occupation, and friends. Among factory workers, parent and school influences were less, and financial lacks more important; their histories could best be characterized by "lack of stimulation."

Reynold's important study of manual workers confirms the lack of internal direction of workers in this field. He reported that initial job choices appeared to be singularly uninformed, inappropriate, and unrewarding. It was customary both in initial and in later jobs for the workers to take the first available job that met their minimum standards although they may have taken it tentatively. The criteria were: income; the physical nature of the work; the degree of independence on the job and agreeableness of supervision; the interesting or uninteresting character of the work; and the fairness with which the worker felt he would be treated by management.

What can be done to affect some change in the paucity of information available at all levels is suggested by various studies of the effects of courses, of counseling, and so on. (For example, Bateman, Bateman and Remmers, Cowley, Haugen and Douglass, Kitson, Nick, Recktenwald, Remmers and Whisler, and Speer and Jasker.)

Korner feels that unrealistic vocational goals stem from such outside sources as encouragement by school personnel or family pressure, or from emotional factors within the person. She points out that the origin is usually multiple and that motivation is mixed. Lewin has stressed the point that when anxiety over social status is a major determinant of occupational choice (as it too frequently is in our society) inappropriate goals are likely to be selected.

All this emphasizes the point that it is not enough to supply vocational information; self-understanding and self-acceptance are in fact rather more important. With these it is a relatively simple matter to obtain factual vocational information (although information about need satisfaction is not available); without them all the information in the world is an inadequate guide.

We have noted that in all groups at all ages there is a consistent tendency for more persons to prefer professions than have the capacity to function in them or than society is apparently willing to support. This requires some explanation. It is not a purely financial matter, since many businessmen make more money than do professional men. Nor is it a matter primarily of security: with career schedules, pension plans, and other current developments in the business world there may be less security in the long-range sense for the man on his own in a profession. It would seem that this emphasis on professions is related to prestige and status. Analysis of prestige studies is postponed to Chapter 23. Here it is sufficient to point out that all such studies give the highest prestige ratings to professional occupations. This is probably so because of the greater independence that men in these occupations have or are believed to have.

Theories of vocational choice

Several attempts have been made to formulate a comprehensive theory of vocational choice. Carter, basing his many researches primarily on interests, has developed a theory that takes account of personal dynamics as well as of environmental realities. His position is that vocational attitudes develop in the attempt to make a practical adjustment to environmental conditions. The external realities of the individual's familial and social situation, and his own capacities, needs, and motives, limit the possible solutions open to him. During his life he makes some identification with a respected group, which leads to an interest in particular vocational activities. If there are no serious discrepancies between his own capacities and the requirements of the vocation, and no serious obstacles, he may continue in this line, but, if serious discrepancies or serious obstacles occur, he must become reoriented toward a different occupational group. Eventually a pattern of vocational interests emerges which becomes closely identified with the self, and forms a basis for many decisions and a guide for long-time planning. During the developmental period there is a trend toward more practical and workable interest patterns. Critics of Carter's theory have objected that studies of interests have shown less variation than his theory would require, but persistence and stability of interests is a general, not an invariable, rule, and the exceptions must be accounted for.

Darley has hypothesized that occupational interest types grow out of the development of the individual personality.

Bordin has offered the most rigidly designed theory of vocational interests in a series of hypotheses. It must be specified that by interests he means strictly inventoried interests, and his data come only from tests. He states that vocational goals and aspirations form one of the mainsprings of action and that, in filling out an interest blank, what is being expressed is the subject's view of himself in terms of occupational stereotypes. He notes that the emerging pattern of interests varies with the degree to which the subject accepts an occupational stereotype as self-descriptive and with his knowledge of the true occupational stereotype. Interests then are considered as a byproduct of the personality. Interest test patterns will change whenever the self-concept changes or there is a change in knowledge of the occupational stereotype.

The work of Ginzberg and his colleagues can be described briefly. They interviewed 64 boys, aged 11 to 24, the sample being an upper socioeconomic level one, 17 high school boys in a settlement house population, and 10 college girls. Interviews were highly structured and about an hour in length. Their theory is that occupational choice is a largely irreversible process, and that compromise is an essential aspect of every choice. They describe three developmental periods, which they call fantasy (6–11 years), tentative (12–17), and realistic choices (18 plus). Small's cogent comments on this have already been noted.

Super (1953) has presented a summary statement of a comprehensive theory. It points out the many factors that must be considered as determinants of occupational behavior, but without offering an adequate organization of them. His statement is:

> 1. People differ in their abilities, interests, and personalities.
> 2. They are qualified, by virtue of these characteristics, each for a number of occupations.
> 3. Each of these occupations requires a characteristic pattern of abilities, interests, and personality traits, with tolerances wide enough, however, to allow both some variety of occupations for each individual and some variety of individuals in each occupation.
> 4. Vocational preferences and competencies, the situations in which people live and work, and hence their self concepts, change with time and experience, making choice and adjustment a continuous process.
> 5. This process may be summed up in a series of life stages characterized as those of growth, exploration, establishment, maintenance, and decline, and these stages may in turn be subdivided into (*a*) the fantasy, tentative, and realistic phases of the exploratory stage, and (*b*) the trial and stable phases of the establishment stage.
> 6. The nature of the career pattern (that is, the occupational level attained and the sequence, frequency, and duration of trial and stable jobs) is determined by the individual's parental socioeconomic level, mental ability, and personality characteristics, and by the opportunities to which he is exposed.
> 7. Development through the life stages can be guided, partly by facilitating the process of maturation of abilities and interests and partly by aiding in reality testing and in the development of the self concept.
> 8. The process of vocational development is essentially that of developing and implementing a self concept: it is a compromise process in which the

self concept is a product of the interaction of inherited aptitudes, neural and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of role playing meet with the approval of superiors and fellows.

9. The process of compromise between individual and social factors, between self concept and reality, is one of role playing, whether the role is played in fantasy, in the counseling interview, or in real life activities such as school classes, clubs, part-time work, and entry jobs.

10. Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits, and values; they depend upon his establishment in a type of work, a work situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences have led him to consider congenial and appropriate.

It would seem that a satisfactory theory of vocational choice must depend upon a better understanding of the origin of interests.

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CHAPTER 22

Progress in the Occupation

PATTERNS OF PROGRESSION

For many persons the beginning job or jobs may have little or no relation to interests, choices, or eventual work history. Many adolescents hold down a series of unrelated jobs, often concurrently with school attendance. These are usually directly related to the availability of the job rather than to the interests of the worker. For those for whom education or other circumstances will open up opportunities for more consequential employment, this period may be a temporary one. For those who do not know what they want to do, it may be a period of trial and error. In these cases it may continue for several years, or the person may be lucky enough to happen upon work that interests him and that can become more or less permanent. There are some who never seem to get beyond this floundering period, as Davidson and Anderson described it. They, and Form and Miller have documented this stage at some length. Jobs available under these circumstances are usually directly related to fluctuating economic conditions, and the number of such jobs open may change overnight.

There is some evidence that working for a year or two between high school and college is not inadvisable. Strabel found that both boys and girls out of school for 2 or more years after high school were definitely superior to others in college success. The high motivation of veterans has been generally noted. Furthermore, Hansen and Paterson found, in a study of the scholastic achievement of 265 veterans, that 63 per cent made substantially higher Honor Point Ratios than they had prewar. What the effect of interruption in education may have upon later life is not known, but the little evidence available would suggest, for example, that military service between high school and college need not have a disrupting effect. Increased maturity at the time of entering college or entering upon work may be helpful.

The initial job may be of very great importance in advancing or hindering eventual lifetime satisfactions, particularly for nonprofessional work. Several studies have pointed out the disillusionment that may come when an initial job, looked forward to as an indication of the attainment of adulthood, turns out to be frustrating. (Phillips; Tenen; Greenwell.) Such disappointments may be lessened when the jobs are seen to have possibilities for eventual advancement or when they do give some feeling of social status. However, jobs taken just from need for money may be hard to adapt to, and under pressure it may happen that the person dare not attempt a change either to another job or in the circumstances under which he is working. To the extent that adaptation to the situation involves building up a gross fantasy life, it may be very detrimental if long continued.

Differential mobility

The degree of mobility normal to different occupations is markedly varied. The term vertical mobility is used to indicate movement within the same or closely related occupations, by ascent or descent to an adjacent level. A shift from one type of occupation to another is called horizontal mobility. (By our classification, vertical mobility would indicate a change in Level; horizontal mobility a change in Group.) Only in jobs at the lowest levels is an adolescent able or permitted to do what he will eventually be doing; hence some vertical mobility is not only usual but is also an essential element in the career pattern of all upper level workers. Horizontal mobility is not necessary, in the same sense, but it does occur with considerable frequency, even among professional groups. Wood has reported that about one-tenth of scientific and technical personnel may shift to wholly unrelated fields at some time in their lives.

There have been a number of sociological studies of both vertical and horizontal mobility. (Caplow, Miller and Form, Reynolds.) Horizontal mobility is probably least in the upper Levels of our classification, and is not great among the craftsmen in Level 4. In the professions and subprofessions, some degree of vertical mobility is the rule. Most professional workers, however, very soon move to the professional level, often upon completion of their training. Specific training may have begun at different ages, of course. Wolfle has noted differences in the patterns of college graduates from different fields. His data are shown in Table 22.1, on page 276.

For most workers in Levels 1 through 3 and in all Groups except III, the work usually involves a lifetime commitment. Increasingly long training periods are required, and frequently a supervised apprenticeship of some sort before full personal independence is attained. The training stages themselves serve to weed out many persons; whether or not they eliminate those who would be incompetent or temperamentally unfitted to the work has never been adequately studied for any group. The effectiveness probably varies directly with the extent to which the training approximates the actual work situation. Advancement within the professions is largely controlled by the internal structure of the particular professional group.

TABLE 22.1. EDUCATIONAL AND OCCUPATIONAL HISTORIES OF COLLEGE GRADUATES WHO WERE WORKING IN 1953 IN BUSINESS, EDUCATION, OR OTHER PROFESSIONAL FIELDS (FROM WOLFLE, 1955)

	Percentage Employed in 1953 in		
Occupational History	Business	Education	Other Professional Fields
Majored in field in college and worked continuously in it since	5	26	41
Majored in other field in college, but worked continuously in the one indicated since college	14	29	13
Took some graduate work prior to entering professional field, but worked continuously in it since	19	15	31
Worked in a nonprofessional field prior to entering current professional field, but worked continuously in field since entering	23		
Miscellaneous other patterns of educational and occupational history (including persons who moved out of and returned to a field)	29	30	15

Most crafts also involve what amounts to a lifetime commitment, particularly those with a period of apprentice training. However, those who reach the position of skilled workman (Level 4) in any Group have usually come up from jobs in Levels 5 and 6. They may go on to some executive job, but they rarely go above Level 3.

Many Group III occupations and a few in other Groups frequently involve a long-term career with the same employer. These are the various civic and governmental positions, most of which are under civil service; the executive levels of large businesses, and a few others, such as some technical workers. Here the primary continuity is the employer rather than the work itself. There are increasing numbers of private industries which have systems emulating that of civil service, with regular channels of advancement within the organization. Proprietors, managers, and officials may have started at almost any Level; clerical workers, except the few who go up in executive positions, have very little vertical movement.

At Level 5 there has obviously been very little vertical movement, but there may have been a good deal of horizontal movement. There are few situations in this group in which the employee can acquire a vested interest in remaining where he is. He is easily replaceable, but he can also easily replace someone else, and the general monotony of these jobs conduces to fairly frequent change. Under such circumstances, particularly as income will usually not change markedly with job, interpersonal relations with others on the job may have the greatest importance.

Caplow has isolated a group of very miscellaneous occupations, which are characterized by the possibility of marked fluctuations in income. These include upper Level occupations which are neither dependent upon the development of a professional clientele nor upon a stable employer: agents and brokers (outside of large business bureaucracies), politicians, small proprietors, arists and entertainers, and salesmen. He remarks that it is probable that the highest earned incomes in the United States are received by entertainers and salesmen, but that it is not unusual for members of these occupations to be without any income for varying periods of time.

At Level 6 even horizontal mobility is more restricted. On the other hand, there may be geographical mobility to an extreme degree. Many in this Level are migratory workers.

Clearly the life pattern of any individual will vary with his occupational group. Progress in any occupation, then, must be judged against the typical or modal pattern of that, or closely related occupations. Unfortunately our data are extremely limited, and more longitudinal studies of career patterns are greatly needed. We do know that there is a very strong tendency for children from different socioeconomic levels to enter different occupations and for them generally to enter occupations at the parental level. Yet, there is little relation between the specific occupations of parent and child. Although, generally, upward movement exceeds downward movement, the number of persons who move from one major classification to another, after the trial period, is relatively small. Even within one occupation, the lines and rates of movement from an entry occupation to advanced positions are little known. In highly organized professions, and in bureaucratic situations, the in-groups are usually well aware of the pattern, but the information is often not available to the newcomer, and for almost all other occupations it is often not available at all. One difficulty, of course, is that outside the organized professions there may have been very many routes taken to the same end position.

CHANGES WITH AGE

In all Groups and at all Levels, there are fairly well-recognized changes in hierarchial position that are associated with age (and experience), if only those guaranteed by seniority rights.

Studies of age and achievement have related chiefly to professional persons. Lehman's extensive studies in this field have been assembled in a book. He found differences between fields in the age levels at which major contributions were made. His findings are shown in Table 22.2. Note that athletes and poets reached their peaks earliest. Bjorksten has criticized Lehman for not taking into account also the time available for creative work which he believes varies approximately as Lehman's output curves do, but to a considerable extent this is within individual control.

Meltzer studied the productivity of social scientists; his subjects were 266 faculty members with a Ph.D. in economics, political science, social anthropology, psychology, and sociology. All were over 33 years old, with at least 3 years in the field. He found that the rate of educational progress and early publishing were significantly associated with both quantity and quality of output, and that what they had done in the past was the best predictor of what they were doing in the present.

There are differences in the ages at which employment is normally terminated, either through formal regulations requiring retirement, or through reluctance to hire older people. How closely the practice parallels decline of capacities has not been thoroughly studied. Brozek points out that some sensory functions such as color vision show little or no deterioration with age. There have been a number of studies on changes in motor and intellectual functioning but little on changes in personality dynamics, although much literature on obvious gerontological changes is now being accumulated. It seems safe to sum up what is presently known as indicating that, within the ages to which persons normally work in our culture, age changes are less important than many other factors as interferers with produc-

TABLE 22.2. AGES AT WHICH SUPERIOR CONTRIBUTIONS ARE MADE AT THE GREATEST AVERAGE RATE IN DIFFERENT FIELDS (LEHMAN)

Field	Age	Field	Age	Field	Age	Field	Age	Field	Age	Field	Age
Chemistry	26–30	Botany	30–34	Logic	35–39	Oil paintings	32–36	President, American college and university	50–54	Professional football	22–26
Mathematics	30–34	Disease description	30–34	Ethics	35–39	American sculpture	35–39	U. S. Presidents	55–59	Prizefighters	25–26
Physics	30–34	Genetics	30–39	Aesthetics	35–39	Modern architecture	40–44	U. S. Ambassadors 1875–1900	60–64	Professional ice hockey	26
Electronics	30–34	Entomology	30–39	General philosophy	35–39	Contemporary oils	40–44	U. S. Senators, 1925	60–64	Professional baseball	27–28
Practical invention	30–34	Psychology	30–39	Social philosophy	36–44			Army command, 1925–1945	60–64	Professional tennis	25–29
Surgical techniques	30–39	Bacteriology	35–39	Metaphysics	40–44			Speakers, House, 1900–1940	70–74	Auto racers	26–30
Geology	35–39	Physiology	35–39	Educational theory and practice	35–39			Popes	82–93	Chess	29–33
Astronomy	35–39	Pathology	35–39	Economics and political science	30–39					Golf	31–36
		Medical discovery	35–39							Billiards	31–36
										Rifle, pistol	31–36
										Bowling	31–36
Instrumental selection	25–29	Lyrics, ballads	22–26	Religious poetry	32–36						
Vocal solos	30–34	Elegies	25–29	Comedies	32–36						
Symphonies	30–34	Odes	24–28	Tragedies	34–38						
Chamber music	35–39	Pastoral	25–29	Most influential books	35–39						
Orchestral	35–39	Narrative	25–29	Hymns by women	36–38						
Grand opera	35–39	Sonnets	26–31	Novels	40–44						
Cantatas	40–44	Lyrics	26–31	Best books	40–44						
Light opera, musical comedy	40–44	Satiric	30–34	Best sellers	40–44						
		Short stories	30–34	Miscellaneous prose	41–45						

tivity. The extent of individual variation is so great that averages are hazardous, but apparently later incidence of and lower rates of decline are associated with higher levels of ability.

With persons in the professional and semi-professional groups, at least, productive capacity normally does not begin to decline before 60, at the earliest. For these groups and for administrators, maturity of judgment and breadth of experience more than compensate for some inflexibility. (Clague.)

Anderson and Goodenough studied age and sex differences in productivity of American psychologists. They found that mean age for the first publication was 30 for both men and women, but that there was a marked sex difference in favor of the men in average numbers of pages per year and in increase with age. Men produce more and longer publications. Men, however, reach the peak of publication between 35 and 40, and then the number of pages per year declines, but the women reach their peak between 50 and 55, followed by a sharp decline. Men write fewer but longer publications as they grow older.

Brown and Ghiselli studied age of semi-skilled workers in relation to abilities and interests. They found the older workers comparable to the younger in speeded tasks involving neither precision nor complex mental processes, and in tasks which involve familiar materials and operations. The older, however, were inferior in abstract and complex tasks. There were no significant changes in interests except for a preference among the older workers for jobs at higher occupational levels.

It can be seen that our information on occupational patterns is still extremely limited. When such data are available, individual deviations from the pattern can be assessed. Prediction of future possibilities will be much more accurate on such a basis.

SUCCESS AND FAILURE

Definitions

There have been many ways of defining what is meant by success in an occupation. (Stott, Reeves, Davies.) Failure is easier to define; it is generally just taken to mean inability to get a job or to hold one. From one point of view success at any job means not being fired from it, but, if this is at the cost of extreme frustration for the person or his employer or associates, it seems a hollow sort of success. And it is a criterion of little value for studies of the sort with which we are concerned.

Success can be considered producing as much on the job as others in the same job do in the same time, or producing work of about the same quality. Applying such a definition, a career would be considered successful if it had followed the patterns for the occupation reasonably closely, that is, if advancement had occurred at about the usual times to about the usual positions in the hierarchy, and with about the usual changes in income. Obviously considerable deviation would have to be allowed around the means, but only very marked deviations would be significant of above-average success or of failure.

Success has also been defined as meaning above-average achievement, or gaining high standing in one's own group, or eminence. This can be indicated in various ways. In scientific fields it is associated with productivity (Dennis); with election to certain honorary societies, particularly the National Academy of Sciences; with receipt of honorary degrees and prizes. In artistic fields, there are fewer and perhaps less well-defined criteria, but in painting, for example, prizes, invitations to exhibit at the best shows, serving on juries for prizes are all indications of high status in the field. In business such indications may be in positions of greater responsibility and authority, and in income. Income is probably more significant in these fields than it is in the scientific or the artistic.

There can be still another definition of success: that a person has not only held his job, or followed his occupational career steadily, or even has become famous, but that he has generally derived satisfaction and pleasure from it. There have been eminent men who were basically unsatisfied and men of mediocre standing who were fully satisfied. In this sense success means essentially occupational adjustment.

Agreement on a definition of what constitutes success is only a first step to study of success and how it is obtained. Even with a definition at hand, it is not easy to develop workable criteria for measuring degrees of success. The criterion problem has already been discussed in connection with various studies. It is even more difficult when an over-all evaluation is to be attempted.

Studies of satisfaction and dissatisfaction

One way of getting an idea of over-all satisfaction is to consider whether, given another start, one would do the same thing again. A survey by *Fortune Magazine*, in 1938, of a sample of 5,000 received answers as indicated below to the question, "If you could go back to the age of 18 and start life over again, would you choose a different career or occupation?"

	All, %	Professional Workers, %	Factory Laborers, %
Yes	41	29	61
No	39	53	21
?	20	18	18

It is not too surprising that factory laborers would more often choose a different career than professional men would.

Using the same question Paterson and Stone sampled about 100 representative persons in each of seven occupational groups on two occasions. The two samples were very similar, and there was a clear occupational hierarchy of job satisfaction, ranging from a low of 18 per cent of streetcar men who were satisfied to a high of 78 per cent of employers who were satisfied with their work.

Nelson reported from a study of 420 businesswomen that 72 per cent were satisfied with their work and would do the same again.

Two studies of liberal arts graduates both indicated that satisfaction had little relationship to job categories. Inlow felt that job satisfaction was a part of the general personality pattern of the subjects. Wrenn found that 19 per cent of Stanford graduates would not choose the same vocation, but that about as many were dissatisfied with business as with professions, and that there were some dissatisfied persons in 71 of the 91 occupations listed.

Studies of satisfaction and dissatisfaction in work have mounted. For some years these have been reviewed periodically by Hoppock and various associates (see references at end of chapter). In 1951 a summary of 16 years of such studies noted that, of the 161 reports of job dissatisfaction, the percentage of those dissatisfied ranged from 1 to 92, with a median of 19. This enormous variation in results reflects not only differences among different occupational groups and differences in type of study but also differences in controls of major variables. About all that is certain is that there is enough dissatisfaction to raise basic questions with regard to the social structure.

Hoppock found a correlation of satisfaction with age of +.21 for 286 workers in a typical Pennsylvania manufacturing village. Super (1939) has reported that job satisfaction is cyclical, changing with age in a manner in accord with Buhler's studies. He noted that, from 20 to 24, satisfaction was general; from 25 to 34, dissatisfaction was common, followed by satisfaction with a temporary decrease at 45–54. He thought that rise in the occupational world with age explained increased satisfaction with age, but it is also noticeable that occupational satisfaction changes in about the same way as rise and fall of worry clusters, so far as these have been studied.

Progress in the Occupation

Super has also noted a significant but not linear relationship between satisfaction and occupational level, with satisfaction greater at the higher levels. This is in accord with the findings of Centers and Cantril on income satisfaction and income aspiration: the lower the occupational status (or Level) the more likely is dissatisfaction with income.

Roethlisberger and Dickson have pointed out that dissatisfaction is usually a general effect of a complex situation and that it is necessary to distinguish between manifest and latent content of grievances. For example, the attitude of a superior can be so devastating that it cannot be consciously faced by the employee, and he may give as the cause for dissatisfaction anything from insufficient income to the condition of the rest room. Grove and Kerr found dissatisfaction on all variables for jobs in a firm in receivership. They felt that the unavoidable insecurity had had a strong halo effect.

The many studies on job satisfaction and dissatisfaction have covered such diverse subjects as, among others, coal miners, psychologists, railroad employees, clerical workers, retail sales personnel, hospital attendants, and IBM operators. The major causes of dissatisfaction, as given with varying percentages and emphases, may be listed as: (see Brayfield and Rothe; Gadel and Kriedt; Hoppock, 1937; Kahn; Kelly and Harrell; Loken; Palmer, Purpus, and Stockford; Quayle; Seidman; Seidman and Watson; Stagner, Flebbe, and Wood; Wickert)

Discrepancies between aspirations and actuality.
Inacceptable supervisory behavior. (This may be of many sorts, and may for some mean too much and for others too little supervision. The usual complaint is, however, insufficient regard of the supervisor for the individual as a human being.)
Inadequate opportunities for promotion or advancement.
Unpleasant nature of the work.
Uncongenial working conditions. Uncongenial social conditions are more important as a rule than unpleasant physical ones.
Insufficient opportunity to make decisions, to have a part in arrangement of work, etc.
Uncertainty of continued employment.
Working hours.
Monotony of tasks.
Wages.

These studies are not so designed that it is possible to be sure of the reasons why some studies give priority to one complaint and some to others. Apparently the emphasis varies with the actual job situation, in accord with the level at which basic needs are being satisfied. An intermittent job, which barely pays a subsistence wage, is unsatisfying primarily in terms of income and insecurity. Jobs beyond this are judged for satisfaction by the extent to which next emerging needs are met, those for belongingness to a group, and for status and prestige. Then attention may turn to needs for independence and responsibility, and to more intellectual and creative needs.

Shaffer has attempted to study job satisfaction as it is related to need satisfaction, by means of a questionnaire designed to measure for each of the needs listed below, the strength of the need, the degree to which it was being satisfied in the job, and over-all job satisfaction:

A. Recognition and approbation.
B. Affection and interpersonal relationships.
C. Mastery and achievement.
D. Dominance.
E. Social welfare.
F. Self-expression.
G. Socioeconomic status.
H. Moral value scheme.
I. Dependence.
J. Creativity and challenge.
K. Economic security.
L. Independence.

His sample of 67 is heavily weighted in the upper brackets, and his finding that the strongest needs of this group were creativity, mastery, and social welfare cannot be generalized beyond this group. There was, however, some evidence that the measure of the extent to which each individual's most important needs were satisfied yielded the best prediction of his over-all satisfaction. Although he pointed out various weaknesses in his specific instrument, it is clear that this approach can yield very helpful information.

Success or satisfaction, and adjustment

A number of studies have concluded that, in almost any occupation, the well-adjusted person generally gets along better than the maladjusted one. (Smith, McMurry, Stapel, Weitz.) Smith points out that the well-adjusted person either gets out of uncongenial circumstances, or accepts them and finds interests and satisfactions elsewhere. Occupations are our most time-consuming activities, and it is in point of fact inpossible to separate occupational adjustment from general life adjustment, or occupational satisfaction from satisfaction with life. One is a measure of the other, neither is prior to nor independent of the other, both are indications of the person in the world.

Maladjustment may result in less employment, lower earnings (Hanna), lower production, or more trouble on the job (Heron), as well as more personal dissatisfactions. In a study of the adjustment to their jobs of 150 neurotic and psychopathic soldiers, Jaques and Crook found several adjustment syndromes which were unrelated to psychiatric diagnosis. They noted, too, that the circumstance most conducive to adjustment for any group was that the soldier be free to set his own pace at work. It was also advantageous for him to have a job along his own specialty or interest. Certainly it has been frequently demonstrated that occupational therapy which uses tasks meaningful to the man performing them is much more effective than busy work.

Unemployment

Numerous studies have shown some differences between persons who get jobs, when jobs are scarce, and those who do not.

Studies of youth just entering the labor market have had somewhat conflicting results, largely because of the fact that the labor market for such applicants is extremely varied from place to place and from time to time. Long, for example in a study of 469 white boys and 429 white girls who left school at or before high school graduation between 1934 and 1938, found that by 1941 more boys were employed than girls; that there was no relation between intelligence scores and tenure for either; that height and weight were not associated with regularity of employment; that various family measures, socioeconomic status of homes, number of siblings, birth order, and family size, etc., were irrelevant. He did find that native-born sons were more often employed (native whites have the advantage at all levels of employment) and that, among those who deviated from the traditional family pattern, fewer of the boys and more of the girls were employed.

In 1954, however, a report by Buder in the *New York Times* indicated that the New York State Employment Service found it easier to place girls in starting jobs and that their salaries were estimated to be about $5 a week higher than those of boys. According to the employment service this is largely because more of the girls had taken high school courses (stenography, typing, bookkeeping) which fitted them for immediate employment. The report does not state whether this particular agency has more job offerings suitable for girls than for boys.

Super and Wright, in a study of three groups of graduates of a suburban New York high school, during depression years, found that intelligence, high school course, and socioeconomic status were differentiating factors between those who were continuously employed and those who had frequent periods of unemployment.

Lazarsfeld and Gaudet, like Long, found that employed and unemployed youths did not differ in intelligence but did in socioeconomic status (they thought that this was effective in allowing more carfare and better clothes in seeking work), in securing work through personal contacts, and in Bernreuter scores. They concluded that personality factors and general attitudes (the employed seemed more cooperative in interviews) motivation and drive were the main differentiating factors between these two groups.

Dearborn and Rothney also reported significant differences between employed and unemployed youth with respect to ethnic origins, and methods of securing employment, and in addition found that the employed more often had worked for pay while at school and had gone beyond high school. They found no differences in age, occupational training, length of high school training, various physical measurements, school attendance and marks, test scores, and ratings on personality characteristics.

Of those who are employed and unemployed during a depression, who are not newcomers to the labor force, the most comprehensive study is the excellent one done at Minnesota by Paterson, Darley, and Elliott. They studied four occupational classes: professional workers and business officials; clerical workers; skilled industrial workers; and semi-skilled industrial workers. They investigated age, time spent at usual occupation, the number of different jobs held, the reasons for leaving the last job, probable reasons for unemployment, and physical condition, and applied a standard test battery. Their findings include the following:

More persons over 45 and under 24 were unemployed.

Unemployment is inversely related to length of time at the usual occupation.

Unemployment is inversely related to length of time at last job.

Unemployment is attributed to economic causes (though women give personal reasons for leaving more often than men).

Personal factors are found with greater frequency among the early unemployed than among the later unemployed.

Technological change is a relatively unimportant factor in these groups.

Test records indicate that early unemployed do more poorly on occupational tests than late unemployed or employed.

Physical defects more likely to affect efficiency are more prevalent among unemployed than among employed workers.

Barnett studied a group of 174 chronically unemployed vagrants by interview and tests, and matched them with a group of nonchronics (except on the Otis). Strong's Occupational Level Score was used, and Hoppock's Job Satisfaction Blank. Father's occupations were rated on the Barr scale. The correlation between OL score and index of satisfaction with unemployment was —.73 for the chronic and —.68 for the nonchronic groups. He also found that father's occupation was negatively correlated with satisfaction with unemployment, and differentiated between the satisfied and dissatisfied men in both the chronic (—.19) and nonchronic (—.41) groups, as well as between the groups themselves. OL scores and father's occupation were not related in the chronic group but were significantly negatively correlated in the nonchronic group. He concluded that it was not so much the absolute level of occupational interest as the possession of one not commensurate with original socioeconomic level that may be responsible in part for social and vocational maladjustment.

Snigel, studying veterans, concluded that joblessness was tied to background, attitudes, and behavior.

There seems, then, to be some selection of the employed which is not directly related to personal capacities, i.e., by socioeconomic background and group membership. This aspect of selection probably becomes more important with decreasing numbers of jobs. It is apparently also true that personality factors, expressed in attitudes and behavior, in getting along with other workers, and in general adjustment on the job, may be more important in determining retention of the job than specific capacities or skills.

It is also true that the fact of unemployment itself, even apart from the seriousness of the economic problem that it may bring, can be extremely devastating, and can by itself do much to induce severe maladjustment in a previously adjusted person. When one understands the many and varied functions of the occupation in the life of the individual it is easy to see why this should be so. It means that he has lost the means of satisfying many of his deepest needs. During periods of economic depression, when many competent people are unable to find work, the loss to them and to society in terms of personal disintegration may be very great. One of the obvious consequences is that work relief of various forms is infinitely superior to any sort of dole, and the more genuinely useful, the less boondoggling, the work, the more psychologically as well as economically valuable it will be.

Laboratory studies and general experience agree that aspiration, an attempt to do more and greater things, is strengthened by success or the probability of successs, and depressed by failure, although the former effect is less variable than the latter. (Child and Whiting.)

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CHAPTER 23

The Effect of the Occupation on Other Aspects of Living

WHAT DIFFERENCE does the occupation make to other parts of a person's life? A very great deal. Obviously, differences in income associated with differences in occupation have a direct effect on most aspects of living. The satisfactions obtained from life will also vary noticeably with the occupation, but this relationship is intricate, because the occupation chosen is affected by the satisfactions desired. In addition, there will be many other differences, of which perhaps the most important are associated with the differences in the people with whom time is spent not only within but also outside working hours. To a large extent this is conditioned by what is done during working hours. Finally, social status in the community usually depends more upon the occupation than upon any other single factor.

INCOME

The actual income received, whether in terms of salary, commissions, special perquisites, or what, is not the only thing to be considered. Psychologically the relation between what a man gets and what he thinks he should get is also of great importance. He may want more money than he receives, but if he is getting as much as others of his own level, and if he thinks this is in general fair, the psychological situation will be very different from what it would be if he felt that he was not being fairly paid. In the effect on general satisfaction this relationship is more important than the actual amount of income.

Thomsen and Roper asked 158 college students what yearly income they expected 10 to 20 years after graduation, and noted that the income expected in 20 years was about twice as high as that then being received by college men who had graduated 20 years previously. They point out that, as the person with a high level of aspiration matures and reality catches up with him, there are three possibilities:

1. To work hard and make achievement equal expectations.
2. To revise expectations downwards, or forget them.
3. To keep expectations but blame the world for not meeting them.

It is probable that college ideas are usually pretty well forgotten in the face of the realities of the situations in which mature men find themselves. Nevertheless, the study has wider applicability in pointing up the importance of expectations as a factor in satisfactions.

Direct comparisons are rather difficult from one occupation to another. Earnings of self-employed are hard to discover. Earnings of a number of other groups who receive part of their pay in dividends, in payments "in kind," in living allowances of various sorts, and in special benefits, are also difficult to compute. Then, too, in reporting income, there is a tendency to understate in order to keep taxes down. There are, however, some studies of income of various groups, both yearly and lifetime.

H. F. Clark's study of lifetime earnings in selected occupations was made some time ago, and the total amounts would now be different, but the relative position of the various groups would probably not be materially changed. His data are shown in Table 23.1, which gives

TABLE 23.1. INCOME IN SELECTED OCCUPATIONS IN THE UNITED STATES, 1920–1936 (H. F. CLARK)

Occupation	Present Value of Average Earnings for Working Lifetime, 1920–1936	Average Earnings per Year, 1920–1936	Probable Error of Estimate, % of value
Medicine	$108,000	$4,850	20
Law	105,000	4,730	35
Dentistry	95,400	4,170	25
Engineering	95,300	4,410	20
Architecture	82,500	3,820	40
College teaching	69,300	3,050	10
Social work	51,000	1,650	15
Journalism	41,500	2,120	45
Ministry	41,000	1,980	15
Library	35,000	2,020	25
Public school teaching	29,700	1,350	5
Skilled trades	28,600	1,430	15
Nursing	23,300	1,310	10
Unskilled	15,200	795	20
Farming	12,500	580	15
Farm labor	10,400	485	15

TABLE 23.2. MEDIAN INCOMES, 1945: MALES (DATA FROM MILLER)

$1,000–1,499	$1,500–1,999	$2,000–2,499	$2,500–2,999	$3,000–3,499	$3,500–3,999	$4,000–4,499	$4,500–4,999	$5,000–5,499
Messengers Private household workers Other service workers Lumbermen, raftsmen, woodchoppers	Shoemakers, repairers, excluding factory workers Attendants, auto service, parking Operatives, furniture, lumber, wood Charmen, janitors, porters Fishermen, oystermen Laborers, textile, construction, wholesale and retail trade	Clergymen Carpenters Painters, paperhangers, glazers Apprentices Drivers, bus, taxi, truck, delivery Mine operatives, n.e.c.[a] Sailors, deck hand Operatives, textile, footwear, other leather goods Guards, watchmen Barbers, beauticians, manicurists Cooks, excluding private Elevator operators Waiters, bartenders, counterworkers Longshoremen, stevedores Laborers Food products Paper products Printing Stone, clay, glass	Musicians, music teachers Sports instructors, athletes, entertainers Managers, eating, drinking places Shipping clerks Salesmen, clerks Bakers Blacksmiths, forgemen, hammermen Cabinet makers, pattern makers Masons, tilesetters, stonecutters Mechanics, repairmen, loom fixers Molders, metal Plasterers, cement finishers Tailors, furriers Stationery firemen Painters, excluding construction and maintenance men Operatives Food	Social, welfare, and recreation Teachers, n.e.c.[a] Managers, personal services Bookkeepers, cashiers, ticket agents Mail carriers Stenographers, typists, secretaries Telegraph operators Real estate agents and brokers Boilermakers Electricians Foremen, construction Inspectors, n.e.c.[a] Linemen, service, telephone and telegraph Machinists, millwrights, toolmakers Plumbers, pipefitters Rollers, roll hands, metal Roofers, sheet metal	Artists, art teachers Designers, draftsmen Pharmacists Postmasters, minor government officials Managers, retail trade Managers, business and repair service Baggagemen Insurance agents and brokers Compositors, typesetters Foremen, transportation, communication, other public utilities Locomotive firemen Brakemen and switchmen, railway	Authors, editors, reporters College presidents, professors, instructors Civil engineers Railway conductors Wholesale officials Foremen, manufacturing Printing crafts, excluding compositors, typesetters	Electrical engineers Mechanical engineers Transportation officials Managers, finance, insurance, real estate Locomotive engineers	Manufacturing officials

TABLE 23.2 (*Continued*)

$1,000–1,499	$1,500–1,999	$2,000–2,499	$2,500–2,999	$3,000–3,499	$3,500–3,999	$4,000–4,499	$4,500–4,999	$5,000–5,499
		Iron, steel Nonferrous metals Machinery Transport equipment excluding motor Railway and railway express Transport, excluding railway Telecommunications, utility, sanitary	Knitting mills Apparel, etc. Paper products Printing Stone, clay, glass Iron and steel Nonferrous metals Machinery Transport equipment excluding motor Laborers Chemical, petroleum, coal Motor vehicles	Stationery engineers, cranemen, hoistmen Structural metal workers Motormen, railway, mine, factory Molders, flamecutters Operatives Chemicals, petroleum, coal Rubber products Motor vehicles, street vehicles Firemen, fire protection Policemen, sheriffs, marshals				

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[a] Not elsewhere classified.

both the 1936 value of average earnings for a working lifetime, from 1920 to 1936, and average earnings per year for the same period.

Miller has computed median incomes for 1949 for selected occupations. His data have been rearranged and are shown in Tables 23.2 and 23.3 for median incomes for males and females. There are marked differences for incomes of men and women in the same occupation. In such classifications as operatives, bookkeepers, waiters, the median income of women is about $1,500 less per year than that for men; for teachers, social workers, and certain others it runs around $1,000 less. In addition, not shown in the tables, the data for the percentages receiving incomes of $10,000 or over are very different. Among the women, 0.4 per cent of musicians receive this much, and that is the highest group. Among the men, there are 29 occupations in which a larger percentage receive over $10,000 (of course, more occupations are listed for men than for women); 17.9 per cent of manufacturing officials; 13.2 per cent of officials in finance, insurance, and real estate; and 12.0 per cent of officials in wholesale trade are the highest groups.

TABLE 23.3. MEDIAN INCOMES, 1945: FEMALES (DATA FROM MILLER)

$500-999	$1,000-1,499	$1,500-1,999	$2,000-2,499
Private household workers	Musicians, music teachers	Bookkeepers, accountants, cashiers, ticket agents	Librarians
Cooks, excluding private	Saleswomen, clerks, n.e.c.[a]	Operatives	Social welfare, recreation
Waitresses, bartenders, counterworkers	Dressmakers, seamstresses, excluding factory	Textile	Teachers, n.e.c.[a]
Service, excluding private	Operatives	Paper products	Nurses
	Food and kindred products	Printing	Office machine operators
	Tobacco	Chemical, petroleum, coal	Stenographers, typists
	Knitting mills	Stone, clay, glass	Secretaries
	Apparel and other fabrics	Metal industries and machinery	Telephone operators
	Furniture, lumber, wood		Operatives, transport equipment
	Footwear, other leather products		
	Barbers, beauticians, manicurists		
	Charwomen, janitors, porters		
	Housekeepers, stewards, excluding private		
	Practical nurses, midwives		

[a] Not elsewhere classified.

The prestige level of different occupations is discussed later in this chapter, but it can be noted here that relative levels of prestige and of income are not precisely the same. It may be that one factor entering into the determination of the prestige level of any occupation is the income to be derived from it. It seems not to be the case that an occupation with high prestige therefore carries high income, at least in this country. (Recent reports suggest that scientific occupations have been decreed of first importance in Russia and that high income and special perquisites have been assigned to them with the intention of raising the prestige level.) For example, according to Miller's tables, manufacturing officials receive the highest average salaries, but on prestige scales they are lower than most government officials, college professors, scientists, and other professional groups.

Obviously income by itself affects many aspects of living, and it must always be taken into account as a factor in studies of job satisfaction, of morale, of leisure-time activities, of social relationships, and so on. Nevertheless, it does seem to be true that, given a decent living wage, and given the fact that the wage is commensurate with the wages of others perceived as at the same level, the importance of the income itself as a factor in such studies is lessened. As was noted at the beginning of this section, it is not the absolute level of income but the level relative to aspiration or expectation that is important.

DAILY LIFE

Many aspects of daily life are affected by the occupation in ways not primarily dependent upon income. Perhaps the most pervasive of these effects has to do with the people associated with. Most people make more acquaintances on the job than they do in other ways. If more than one adult in the family is working, and if it is a family of even moderately social habits, and if the members of the family work at different things, the situation of each individual member of the family is less limited. However, in the usual lifetime situation and particularly in occupations like professions or those in which the employee is committed to long-term work with one or similar organizations the people he meets are the ones who are working with him. The extent to which acquaintances are conditioned by the occupation of course varies with the number of avocational activities. Membership in a church or in a social club, or an active hobby which leads to contact with others, will widen horizons. There are differences, too, between occupations. Some are much more clannish than others. Most occupations have a distinctive "shop talk," which may be as incomprehensible to others as an unlearned foreign language, but familiar and comforting to whose who known it. Webster's cartoons, captioned "They don't speak our language," express this concisely.

The few studies of occupational milieu all accent the out-of-hours influence of the occupation. Different occupational groups have different customs, and even different standards of conduct. Different standards of conduct may be imposed upon different occupations by society rather than by members of the occupational group. A case in point is that of the school teacher. In many communities in this country, a woman teacher is still not expected to smoke, or to be seen in the company of other than a very select few, or even to marry. Many more restrictions may be placed on them than on most members of the community. The reverse is also sometimes true: society tolerates greater license in some groups than in others, for example, in actors.

An example of a very isolated group, with distinct folkways, is that of railroaders. Here the distinction is primarily based on being connected with the railroad, and not on any particular occupation although hierarchial levels are marked. The mobility of the group markedly affects their social relationships, their particular time schedules are unique to them, and their language is replete with expressions not understood by outsiders. Cottrell's study of this group is a classic in this field.

A different sort of situation is faced by the executives in many large businesses. Here it is the individual company that controls the leisure time of its executives, more or less openly, rather than the extended group of those working in one broad field. A study by Browne points out that frequently a considerable part of an executive's social life will be planned for the benefit of the company, and for his own advancement within it. Whyte has shown that the acceptability of an executive for promotion sometimes depends very much upon the social presentability of his wife, and her willingness to arrange their social life in keeping with the practice of the particular company.

Marriage is also affected in other ways by the occupation. Popenoe and Hunt have each made studies of the relation between occupational status and marriage selection. Both men and women marry within the same occupation more often than they marry outsiders, and this is also true for occupational levels generally. Popenoe thinks that this is largely a result of a general similarity of socioeconomic family background.

There are marked differences in daily schedule corresponding to the occupation. Length of working day and the part of the day devoted to work both vary with the job. For most occupations the hours are usually in the 9-to-5 or 8-to-4 range, or day shift versus night shift.

In any event the hours are set and regulated, and are not changed except under exceptional circumstances. There are, however, many occupations, particularly in the higher levels, and more particularly among the independent practitioners, in which hours are extremely irregular, and the working day very long. This is obvious in the case of physicians who answer calls, of journalists and reporters, and so on. It is less obvious for such occupations as those of artist and college professor. To a large extent their working hours are self-regulated, but one of the remarkable features about eminent artists and scientists was the fact that they customarily held themselves to a long and regular working day.

In the case of college professors, the layman may look at the few lectures per week for which they are scheduled, and assume that all the rest is ease, but this is not so. Charters made an interesting study of 94 faculty members in the College of Education at the Ohio State University. He had them make a record of their daily work periods for one week, during midterm, and he believes that the resultant figures are fairly representative. He found that the median hours worked were 58 hours and 25 minutes. The range was from 2 to 107 hours, with quartiles at 50 hours and 20 minutes, and at 66 hours and 40 minutes. All but 18 worked on Sundays, and they consistently worked at night. Hours outside of class work were taken up with preparation, research, university and professional association committees, conferences with students, and so on.

How leisure time is spent varies not only with income, but also with occupation and in ways other than the demands made upon it by business or professional associates. In part this is a secondary result of some assortment into occupations of persons with the same basic interests, and of similar personality patterns. In part, it is a reflection of similarity in educational and intellectual levels. There is some tendency for persons of the same general occupational status to live in the same neighborhoods, which also affects available leisure time activities.

An effect on marriage selection has already been noted. Similarly, the number of children, the schools to which they are sent, the way they will dress, how soon they will go to work, and what they will do, are all affected not only by income level, but even more directly by the group of persons with whom the parents are most closely associated.

We have already discussed the fact that satisfaction is, in general, greater at higher occupational levels than at lower, and this general satisfaction will be sure to give emotional color to all of life, and incidentally to the lives of the whole family.

Even such matters as health and longevity have some association with occupations. This association is probably the result largely of the factors that condition choice of occupation rather than of aspects of the occupation itself. There are, however, some working conditions that are more likely to bring about certain health problems than others. An obvious example is the possibility of direct effects on the body from the materials handled (lead poisoning, for example). There are also differences in the incidence of psychosomatic illnesses which are associated with occupation, but these have not been very fully studied. A review by Frumkin of the literature on occupation and mental disease shows that rates of first admissions to mental hospitals are inversely correlated with income, prestige, and socioeconomic status. Low income creates problems of nutrition and hygiene generally, but it also creates psychological problems, as does low prestige. It is not surprising that these can be reflected in the incidence of mental illness. There is also some evidence that the type of illness varies with the socioeconomic status.

TABLE 23.4. AVERAGE LIFE SPAN OF EMINENT MEN IN DIFFERENT PROFESSIONS (FROM ALEXANDER)

Profession	*N*	Average Age
Educators	167	72.56
Lawyers	270	72.39
Engineers	168	71.10
Naturalists	281	70.35
Historians	343	70.12
Inventors	141	70.09
Chemists	143	69.57
Medical men, biologists	331	68.47
Mathematicians	256	67.11
Sculptors	139	68.44
Musicians	950	67.40
Painters	772	67.12
Actors	162	66.05
Poets	684	61.94

Alexander has investigated longevity of eminent persons, and finds distinct differences between professional groups. His results are shown in Table 23.4. He reports that the distributions are all very peaked. Longevity is largely dependent upon genetic factors; hence this, too, is very probably a secondary association with occupation.

SOCIAL STATUS: PRESTIGE SCALES

We have already noted that social status is more dependent upon occupation than upon any other single factor. Occupations in our culture apparently have a fairly definite and constant hierarchy of prestige. It has also been noted earlier that professions generally are at the top of this hierarchy and that this probably accounts for their consistent overselection as occupational goals. But just what is the prestige hierarchy?

The first study attempting to establish distinctions between occupational levels in terms of prestige, or status, was made by Counts in 1925. Since then there have been a number of such studies; those since 1934 are summarized in Table 23.5.

TABLE 23.5. SCALES OF OCCUPATIONAL PRESTIGE (STUDIES SINCE 1934)

Year	Author	Sex	Number of Occupations Ranked	Judges
1934	Hartmann	M	25	100 adults
1934	Anderson	M	25	673 college students
1935	Nietz	M	40	1,622 high school seniors
1940	Stevens	F	25	About 150 women college students
1943	Smith	M	100	345 high school and college students
1946	Byers	M	25	50 soldiers
1947	Deeg and Paterson	M	25	475 high school and college students
1947	Tuckman	M	25	410 college students (Canada)
1947	National Opinion Research Center	M	90	2,920 adults
1948	Baudler and Paterson	F	29	763 high school and college students
1948	Welch	M	26	500 college students
1950	Tuckman	F	29	639 high school and college students
1950	Hall and Jones	M	30	1,000 adults (England)
1950	Stubbins	M	462	219 veterans

The correspondence among the various studies is extremely close for both men's and women's occupations. Ratings for these studies using comparable lists of occupations are shown in Tables 23.6 and 23.7. Rank correlation between the studies of Counts, and of Deeg and Paterson, was +.97. Tuckman's rankings also correlated +.97 with those of Deeg and Paterson. The study of Hall and Jones in

England, too, on the basis of 30 occupations, was extremely close to the American and Canadian standings. For women's occupations the studies of Baudler and Paterson and of Tuckman gave a rank correlation of +.99.

TABLE 23.6. PRESTIGE RANKINGS OF MEN'S OCCUPATIONS FROM VARIOUS STUDIES[a]

Occupation	Counts, 1925	Nietz, 1935	Deeg and Paterson, 1947	Tuckman, Canada, 1947	National Opinion Research Center, 1947	Welch, 1949
Banker	1	1	2.5	4	2	2.5
Physician	2	2	1	1	1	1
Lawyer	3	3	2.5	2	3	2.5
Superintendent of schools	4	4	4	5		4
Civil engineer	5	5	5	3	5	5
Army captain	6	6	6	7	6	7
Foreign missionary	7	7	7	6		8
Elementary school teacher	8	8	8	8	8	6
Farmer	9	12	12	10	9	9
Machinist	10	10	9	11	10.5	10
Traveling salesman	11	19	16	12	12.5	15
Grocer	12	11	13	13		13
Electrician	13	9	11	14	10.5	13
Insurance agent	14	13	10	9	12.5	12
Mail carrier	15	14	14	17		16
Carpenter	16	15	15	15	16	15
Soldier	17	16	19	18	18	19
Plumber	18	18	17	16	17	17
Motorman	19	17	18	20	20	20
Chauffeur	20	20	20	21	19	18
Barber	21	21	21.5	22	21	21.5
Coal miner	22	22	21.5	19	22	21.5
Janitor	23	23	23	23	23	23
Hodcarrier	24	24	24	24		24
Ditchdigger	25	25	25	25		25

[a] Ranks corrected to this list.

The most comprehensive of such studies, conducted by the National Opinion Research Center of the University of Denver in March, 1947, reported on the social status of 90 selected occupations for men. They made an opinion survey of a representative sample of Americans 14 years and over, which included 2,920 people selected by geographic area, size of city, age, sex, socioeconomic status, and race. The results are given in Table 23.8, arranged by type of occupation; both rank and score are shown. Each respondent gave each occupation one of five positions, excellent, good, average, somewhat below average, poor. Percentages were computed for each position for each occupation, and weighted to give a score with a maximum value of 100 and a minimum value of 20.

TABLE 23.7. PRESTIGE RANKINGS OF WOMEN'S OCCUPATIONS FROM TWO STUDIES

Occupation	Baudler and Paterson, 1948	Tuckman, Canada, 1950
Physician	1	1
Artist	2	4
Registered nurse	3	2
Journalist	4	3
Professional musician (symphonic)	5	5
High school teacher	6	6
Designer	7	8
Commercial artist	8	7
Secretary	9	9
Buyer	10	10
Elementary school teacher	11	11
High school music teacher	12	12
Private music teacher	13	13
Kindergarten teacher	14	14
Practical nurse	15	15
Professional musician (dance)	16	16
Stenographer, typist	17	17
Dressmaker	18	18
Sales person	19	19
Office machine operator	20	23
Showcard writer	21	20
Hairdresser	22	21
Sales clerk	23	24
Telephone operator	24	22
Factory sewing machine operator	25	26
Factory operative	26	25
Servant	27	27
Waitress	28	29
Laundry worker	29	28

TABLE 23.8. RATING ARRANGED BY TYPE OF OCCUPATION (DATA OF NATIONAL OPINION RESEARCH CENTER)

Classifications	Scores	Rank
Government officials[a]		
U. S. Supreme Court Justice	96	1
State governor	93	2
Cabinet member in federal government	92	4
Diplomat in U. S. Foreign Service	92	4
Mayor of large city	90	6
United States Representative in Congress	89	7
County judge	87	12
Head of department in a state government	87	12

[a] The census classifies some of these officials as professional and others as managerial.

TABLE 23.8 (*Continued*)

Classifications	Scores	Rank
Professional and semi-professional		
Physician	93	2
College professor	89	7
Scientist	89	7
Government scientist	88	10
Minister	87	12
Architect	86	15
Chemist	86	15
Dentist	86	15
Lawyer	86	15
Nuclear physicist	86	15
Priest	86	15
Psychologist	85	22
Civil engineer	84	23
Airline pilot	83	24
Artist whose paintings are exhibited	83	24
Sociologist	82	26
Biologist	81	28
Musician in symphony orchestra	81	28
Author of novels	80	31
Economist	79	33
Instructor in public schools	79	33
Public school teacher	78	36
County agricultural agent	77	37
Radio announcer	75	40
Newspaper columnist	74	42
Welfare worker for city government	73	44
Undertaker	72	47
Reporter on daily newspaper	71	48
Playground director	67	54
Singer in nightclub	52	74
Proprietors, managers, and officials, except farm		
Banker	88	10
Member of board of directors of large corporation	86	15
Owner of factory employing about 100 people	82	26
Captain in regular army	80	31
Building contractor	79	33
Official of international labor union	75	40
Owner-operator of printshop	74	42
Manager of small store in city	69	49
Railway conductor	67	54
Local official of labor union	62	61
Owner-operator of lunch stand	62	61
Clerical, sales, and kindred workers		
Accountant for large business	81	28
Bookkeeper	68	50
Insurance agent	68	50

TABLE 23.8 (*Continued*)

Classifications	Scores	Rank
Traveling salesman for wholesale concern	68	50
Mail carrier	66	57
Clerk in store	58	67
Craftsmen, foremen, and kindred workers		
Railway engineer	77	37
Electrician	73	44
Trained machinist	73	44
Carpenter	65	58
Automobile repairman	63	59
Plumber	63	59
Garage mechanic	62	61
Farmers and farm managers		
Farm owner and operator	76	39
Tenant farmer (owns livestock and machinery, and manages farm)	68	50
Sharecropper (owns no livestock or equipment, and does not manage farm)	40	87
Protective service workers		
Policeman	67	54
Corporal in regular army	60	64
Night watchman	47	81
Operatives and kindred workers		
Machine operator in factory	60	64
Streetcar motorman	58	67
Milk route man	54	70
Truck driver	54	70
Filling station attendant	52	74
Coal miner	49	77
Taxi driver	49	77
Clothes presser in laundry	46	83
Farm laborers		
Farm hand	50	76
Service workers, except domestic and protective		
Barber	59	66
Restaurant cook	54	70
Restaurant waiter	48	79
Soda-fountain clerk	45	84
Bartender	44	85
Janitor	44	85
Shoeshiner	33	90
Laborers, except farm		
Fisherman (owns own boat)	58	67
Lumberjack	53	73
Railway section hand	48	79
Dock worker	47	81
Garbage collector	35	88
Street sweeper	34	89

Although they found substantial agreement in the ratings from different geographical regions of the country, there were some interesting differences also. (Differences in ratings by people in the Northeast may be a function of city size rather than of region.) The most notable are:

Scientists and lawyers rate lower in the South than in other regions.

County judges, psychologist, sociologists, economists, and bartenders rate higher in the Northeast, and lowest in the Midwest.

Priests rate highest in the Northeast, and lowest in the Midwest.

Bookkeepers rate higher in the South than in other regions.

Railway conductors rate lower in the Northeast than in other regions.

Farm hands rate higher in the West than in other regions.

Sharecroppers rate lower in the South and Midwest than in the other two regions.

Because of the scoring system it is possible to arrange the ratings according to the occupational classification used in this book. This arrangement is shown in Table 23.9, where the number of occupations and the mean score are given for each cell, and for the totals by Level and by Group. It is immediately seen that there is a very close correspondence between mean score and Level, with score decreasing steadily from higher to lower Levels. There are probably some differences associated with division into Groups, but there are not enough ratings for some of the Groups to make good comparisons. Only Group IV has entries at every Level.

TABLE 23.9. PRESTIGE SCORES OF OCCUPATIONS, NUMBER OF OCCUPATIONS RATED, AND MEAN SCORES BY GROUPS AND LEVELS (DATA OF NATIONAL OPINION RESEARCH CENTER)

	Groups																	
	I		II		III		IV		V		VI		VII		VIII		Total	
Levels	*N*	M	*N*	M	*N*	M	*N*	M	*N*	M	*N*	M	*N*	M	*N*	M	*N*	M
1	1	85.0			5	87.6	2	88.5			6	88.3	2	92.5	3	81.3	19	86.8
2					5	85.6	2	85.0			2	83.5	9	80.7	2	69.0	20	81.5
3	3	69.0	1	68.0	7	73.9	3	78.3					1	71.0			16	63.5
4	5	53.8	1	54.0	3	64.0	7	64.0	3	61.0	2	74.5					21	61.7
5	3	50.7					3	57.3	1	68.0							7	56.0
6	4	36.8					4	48.3	3	47.7							11	44.1
Total	16	53.9	2	61.0	20	78.8	22	67.0	7	56.3	10	84.6	12	81.8	5	76.4	94[a]	70.5

[a] 4 occupations have been entered in two Groups each, e.g., college professors in VI and VII.

It is clear, however, that these prestige ratings are quite closely related to Level. Now Level is determined by several things, of which the most important is the degree of independent responsibility involved. Training and skill are also important, and intelligence has some relation to Level, but the basic factor is responsibility, or, to put it in another way, position in a pecking order. This agrees with Caplow's belief that the most important determinant of prestige is the subject's degree of control of other people's behavior and the degree to which his behavior is controlled by others. It is also in accord with Center's study, cited in Chapter 3. This relationship again emphasizes the value placed upon certain types of satisfactions, particularly those involved in self-actualization. Simple reports are likely to underestimate the importance of independence to us, because it is not always conscious, but the overwhelming value it has for us is clearly shown in this prestige scale.

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PART V

Implications

24. The Implications of Occupational Psychology

CHAPTER 24

The Implications of Occupational Psychology

Now that we have made as complete a survey of the general field of the psychology of occupations as is possible at this time, it seems a good idea to reflect on what implications these facts and theories may have for us. It is clear that they can contribute some ideas and some enlightenment to a number of areas. We shall particularly consider education, vocational guidance, basic psychological theory, therapy, and social theory.

EDUCATION

There are several major implications for education. Educational requirements for all occupations are increasing, and there are very few except at the lowest levels for which a high school education is not now specified as desirable. To what extent it is realistic, that is, that more years of education contribute to more effective or more satisfying work on the job, or to what extent lack of education is detrimental, has not been determined for most jobs. It is also a fact that an increasingly greater proportion of the population is getting at least a high school education. Presumably the occupational demands and the educational possibilities are interacting. Apart from the occupational usages of education, it is clear that increasing education has important values in a democracy. Nevertheless, education is modifiable, and it is imperative that some study be made of whether the available education is the best possible. There is a good deal to suggest that this is not so.

Perhaps the outstanding defect in our high school education, in general, is that for the most part it is still keyed to the academic approach. The major emphasis in most high schools is still on college preparation, even though this, too, is slowly changing. There are, of course, a number of trade and technical schools, but these are not only in the great minority, they are also devalued. Furthermore, in the general high schools, so far as the emphasis is being displaced from college entrance, it is very definitely placed upon preparation for white collar jobs rather than for manual ones. This has the very great disadvantage, not only of turning out technically untrained adolescents (it is not certain how much technical training is the appropriate job of the high school) but of turning out psychologically unprepared ones. The problem is one of unrealistic values. An increasing proportion of high school students are going to go into manual work (because the number who go to high school is increasing). It is unfortunate, to put it mildly, that their high school training should have included, as it will have, a sometimes open and sometimes subtle, but nonetheless effective, devaluation of manual work as a way of life in comparison with white collar occupations. Obviously this is going to result in conflict and frustration among those for whom there are no white collar jobs. This can be so even if manual jobs are better suited to them, and could offer as much or even more gratification except that self-esteem has come to be at stake. Discrepancy between ideal and reality, and the frustration incident to it, occurs when it need not occur.

A number of changes have been suggested in the usual high school curriculum that would cope with this situation. Reynolds, for example, proposes a high school core curriculum with three objectives: personal interests for leisure pastime; preparation for intelligent participation in public affairs; preparation for industrial citizenship. By the latter category he does not mean specific vocational training, which he considers undesirable in high school, but experimentation with a wide variety of manual operations in a general handicrafts setting to test capacities and interests. He would also include the rudiments of personnel practice, union rules and policies, and union-management relations, along with courses in occupational opportunities. Reynolds has been so concerned with the overemphasis of white collar activities that he has left them out in his proposal. These, too, should be included for experimentation by the students.

We have noted that the frequent discrepancy between aspiration or expectation and reality has caused much frustration and unhappiness. Social realities change only slowly. More immediate change is possible in the other part of the inequality, in anticipation. Providing some first-hand experience with various occupational settings would help greatly, but this is not enough. It would be very difficult to provide, in this way alone, any real understanding of the types of emotional settings and emotional satisfactions incident to work. And yet it is just here that the greatest frustrations occur. What can be expected from any job, what can be expected from some sorts of jobs and not from others, what kinds of jobs offer most of the satisfactions the particular individual wants can hardly be learned in this way. The great importance of personal relations with other employees or colleagues is hardly suspected at the high school age, nor have our students been given any systematic help in finding out what they can do about personal difficulties, or what their own responsibilities in such a situation may be. It is not suggested that a course in "general psychology," as they are presently conducted, is the answer. Yet it should be possible to devise techniques, both as courses and as part of the total educational setting, which would at least make a start towards a realistic orientation of the students.

Another criticism is that our education is not adequately keyed to the development and encouragement of personal independence, which appears in this survey to be a major need. On the contrary many of our educational practices have the effect of discouraging it, of putting a premium upon conformity and unquestioning acceptance of "facts" and of doctrine. There are answers, good answers, that are not in the backs of the books we use; there are good questions for which we do not have any answers; there are questions that have never been asked. Children are naturally inquisitive, and it is so much more satisfying to find things out for oneself. How much encouragement do they get to do this?

The problem is more important than that of raising levels of personal individual satisfaction, if anything can be more important. It extends to the preservation and development for society of an enormous creative potential which is now going to waste. The crucial years are the early ones; it is in the elementary and high schools that possibly irreparable damage can be done. (Foshay; Knapp and Goodrich; Roe.)

VOCATIONAL GUIDANCE

The implications for vocational guidance are, of course, even more direct. Most vocational counselors are well aware of the situation with regard to manual workers, but they are often hampered in their attempts to deal with it, because of the inadequacies of the school curriculum.

Counselors are becoming increasingly aware, also, of the importance of personality and temperamental factors, but research in this area is still in the beginning stage, as we have seen. Nevertheless it is possible to make more use of such research as is available. Perhaps the most important thing here is to try to make the counselee more aware in advance of the sort of emotional reactions that are going to affect job satisfaction. Many young people are completely unprepared to meet personal frustration in job situations because it has never occurred to them that this might happen. Here the counselor can be of immediate and direct help, long before the educational setting can be so modified as to deal in some degree with the problem.

The emphasis upon whole life pattern as the safest guide to guidance is becoming more usual. It has affected counselors in their work for a long time, even before there was much expression of it as a principle. Berg remarks: "Most of us have used life pattern theory, though without the label, when we may have remarked testily in staff meeting 'I don't care how high his abilities are or what promises he makes. He's over 30 years old and never held a job for more than 5 months!' "

It may be that the two-way classification followed in this book can be of special value in vocational guidance, but this can only be determined by trying it out.

Finally, perhaps the greatest importance for vocational guidance of such a survey as this is in the suggestions that it offers for future research. Shartle's clinical study of foremen is an example of the fruitfulness of the clinical approach. The investigation by Friend and Haggard, studying the relation of occupational adjustment to early family patterns, is one of the most important we have reviewed, and suggests the great potentiality of this type of research for a real understanding of occupational adjustment.

It has become abundantly clear that the problem of occupational adjustment is not merely one of matching aptitudes or even patterns of aptitudes to established job requirements for these aptitudes (although this is not excluded) but that it is as complicated as life adjustment, of which it is only a facet. We are just beginning to learn techniques of study which will throw light on the intricate relationships involved. This suggests that for some time to come we shall need the most painstaking and intensive studies. These are, unfortunately, also the most time-consuming and expensive as well as the most difficult and often frustrating ones. It is likely also to be impossible to set them up with that elegance of research design which is so satisfying to the orderly mind and so often impossible in research in human lives.

PSYCHOLOGICAL THEORY

We have already remarked that occupational adjustment is only a facet of life adjustment, and it follows that any insight we gain into occupational adjustment is likely to have implications beyond the work situation. Any development of the theory of occupational choice and selection will go far beyond vocational guidance as such, in its meanings for normative psychological theory generally and for personality theory in particular.

We shall touch briefly here upon some of the implications for personality theory that derive from the patterns of relationship between personality and vocation, which can now be seen, if dimly, from this survey of research.

First, let us try to state more specifically just what relationships and what patterns have been suggested. It should be emphasized that none of these patterns are finally established, and we shall try to distinguish between those which are more and those which are less speculative at this time. The advantage of this sort of speculation is that it can lead to the formulation of hypotheses which can be checked by future research. Arrangement of occupations into a dual classification has made it possible to see more clearly the relationships of various aspects of personality and background to occupational choice and success.

Although personality factors are generally more closely related to Group, some bear directly upon the Level attained. If we can think of motivation in terms of both kind and degree, it would be fair to say that the kind of motivation or the content of it is related to Group, whereas the amount of it is more significant for Level. Variations in intensity of motivation can go far towards explaining the wide overlapping of intelligence test scores between Levels. How much variation in intensity of motivation affects or is affected by variation in test intelligence and in socioeconomic background we do not know.

We noted also some orderly variation in Masculinity-Femininity scores with Level, the higher Levels being the more feminine. At the same time, we have an apparent paradox since the Levels are so designed that higher ones indicate greater degrees of responsibility and independence, which are culturally considered more masculine than feminine. Perhaps the cultural stereotype is as irrelevant as it is inadequate. Perhaps the explanation lies, in part, in the exclusion of the housewife-mother category from most studies, but it is not clear just how this would affect the results. There are some associations between feminine orientation and academic and verbal abilities, both of which are more needed in the top Levels than in others generally. Practically all we can say at this point is that there may be a relationship, but we do not have sufficient information to be sure whether there is or not or, if there is, what its nature may be.

The different Groups will be discussed separately below, but we can start with some general summary statements. There is some relation between intelligence, education, and socioeconomic background and Group, but it is neither so clear nor so close as the relationship between these factors and Level. The patterning of factors of intelligence and special abilities seems to be more closely related to Group than the level of general intelligence is. Socioeconomic background of parents has some relation to Groups, but perhaps the most striking one is the fact that Group V occupations are held almost entirely by persons with Group V family backgrounds; this is not true of any other Group.

Interests are obviously closely related to Groups and little if at all to Levels. There are a number of other personality variables which seem related to Groups, and it appears possible that many of these, as well as interests, are related to early experiential backgrounds, particularly in the family setting. They will be suggested below. We also noted that some Groups seem to average higher in Masculinity-Femininity scores than others, but here, too, the evidence is inadequate for more than a suggestion of relationships.

In the following discussion of the major findings by Groups it must be remembered that the sparse evidence has come chiefly from upper Level subjects and that these general statements may not apply with the same force at the lower Levels where activities, especially in Levels 5 and 6, tend to be ancillary to upper Level occupations.

GROUP I. SERVICE. The outstanding characteristic of this Group is the fact that personal interactions are a predominant interest, and that the character of this interest is succorant and nurturant, or if it has dominating elements they are usually restrained. Persons in this Group tend to be high in religious and social values, low in others, and to be markedly feminine. They usually have relatively few intellectual and artistic interests, and at the lower Levels may be lower on general intelligence than the average of all Groups. At the upper Levels, there is probably some emphasis on verbal abilities.

GROUP II. BUSINESS CONTACT. This Group shares with the preceding a dominant interest in personal relations, but the nature of the relationship is quite different, being exploitative rather than nurturant. They are high in dominance scores on tests, and high Kuder Persuasive scores are particularly characteristic. They, too, lack intellectual and aesthetic interests for the most part.

GROUP III. ORGANIZATION. Like both preceding groups, this Group is generally nonartistic and nonintellectual. Personal relationships are frequently important, and both poles of the dominance-submission relation appear. In general economic values are given high importance, and persuasive scores may also be high in the upper Levels. Clerical interests are of more importance in this Group than in any of the others, and a factor in many of these occupations. This very large Group also includes many persons without marked personality deviations.

GROUP IV. TECHNOLOGY. In this Group interest in personal interactions is generally low, perhaps at the lowest for all the Groups, although Group V may be about the same in this respect and Group VI is not much above it. There are marked intellectual interests in the upper Levels of this Group, but these are distinctively quantitative and spatial rather than verbal. Mechanical aptitudes and interests are of greater significance in this Group than in any of the others. Artistic interests and values are low, and masculinity ratings are high. Persons in this Group seem to have an object-orientation of interests which has generally characterized them throughout life, and the lack of interest in or necessity for personal interaction is not necessarily defensive.

GROUP V. OUTDOOR. Information on persons in this Group is very scanty. One would judge that intellectual and artistic interests are generally lacking and that mechanical abilities and interests may be common, but less important than in Group IV. We have already noted that persons in this Group tend to come from family backgrounds of the same sort.

GROUP VI. SCIENCE. Intellectual interests and abilities are strongest in this Group and the next, and the patterning of verbal and nonverbal interests varies somewhat with the field of science. Artistic interests are not important. For many of this Group the orientation is away from persons as it is in Group IV, but there is reason to think that with some in this Group it may be defensive. A few in this Group, however, are very directly interpersonally oriented, as the psychologists and anthropologists, but the nature of this orientation is rather different from that in Group I. (It is possible that it would be more enlightening to subdivide this Group further, perhaps into physical, biological, and social sciences, but for the time being the present arrangement seems adequate.)

GROUP VII. GENERAL CULTURAL. This is the most verbally oriented Group, and their interest in persons is again of a somewhat different sort, though similar to that held by those in Group VI of whom such an orientation is also true. It is probable that these persons are considerably higher in dominance than many in Group I. Artistic interests may be of some importance with a few in this Group; intellectual interests are generally strong.

GROUP VIII. ARTS AND ENTERTAINMENT. Only in this Group do special artistic and perhaps some special physical abilities play an important role. Intellectual interests are generally not great, although in a few verbal ability may be high. Members of this Group tend strongly to the feminine side. A striking general pattern in this Group is the strongly narcissistic orientation of most members of it, although the focus of the narcissism varies. This seems to be unique to this Group as a general character.

Although many of the differences noted above may depend upon genetic factors, there is some reason to think that many are primarily the result of the nature of the early upbringing and that interpersonal relations within the family are the most significant single variable.

The self-selection that has taken place in occupational groupings could become a much more valuable sampling technique than it has been. Selection of a given occupation (when there has been a reasonable amount of free choice) offers an extraordinarily useful criterion for study of individual differences. Some indication of how this criterion may be used will appear in the discussion of the genesis of interests.

THE GENESIS OF INTERESTS

Much less attention has been given to the problem of the genesis of interests than to study of their development. It has been pretty generally assumed that the interests are "given" although the question of their basic nature has usually been dodged. There is no theoretical formulation which even begins to be adequate to the problem. Study of life histories in the occupational context, however, offers some very suggestive leads. On this basis, we can construct a theory of interests like the following, which is susceptible to check at many points:

Genetic elements play a part to an as yet unknown extent in such behaviors as are tapped by tests of intellectual and other functions. Genetic elements also play a part, to a completely unknown extent, in the relative strengths of the basic drives in man. They may be more important in determining the relative strengths of the higher drives, since these may not be needed for the preservation of physiological life.

The developed individual differences in capacities, interests, abilities, and drives are a product of the genetic differences and of experience. The role of experience is particularly crucial in the development of individual differences in interests and drives.

When the higher drives begin to function as motivators in the developing individual, the forms in which they find their first satisfactions are important determinants. Two alternative hypotheses are suggested for future checking:

1. The forms in which drives find their first satisfactions will later be expressed as dominant interests.

2. Drives which are most effectively frustrated will be the ones which will later become dominant motivators, provided that the frustration is not so long continued as to result in their practical expungement. The proposition implies that long or severe frustration ending in satisfaction will have more impact (i.e., the satisfaction will be felt as greater) than immediate satisfaction, and hence such needs will be more effective motivators in the future.

Individual differences in interests are also related to the timing of the emergence of basic needs, and to the specific environmental situation at that stage. Their variety in the individual will be related to the number and extent of unsatisfied needs or of partially satisfied needs existing at the same time.

Tyler's studies indicate that sex differences in interests, and in relationships between interests and primary mental abilities, can be detected as early as the first grade. Her work has many suggestions for the problem of the genesis of interests. Boys showed significant correlations between primary mental abilities and play and work interests at this age, but girls did not. She relates these to differences in role factors even at this age, but it seems probable that the situation is more complicated than that, although role factors may well be an element.

Apparently one of the earliest differentiations, if not the first one, in orientation of attention is between persons and nonpersons. What genetic elements may be involved is unknown, but it can be seen that the likelihood that important elements derive from the early handling of the child is very great. A family situation in which the child is loved adequately and approved of but not made the focus of any intense personal relationship seems to be conducive to permitting his attention to focus upon other objects in the environment. From this may develop such object-orientation of interests as will eventually manifest itself in mechanical and scientific interests, and in selection of occupations appropriate to these. (Whether the sex difference here is genetic or cultural is a problem.)

On the other hand, if the child is involved in intense personal relationships (positive or negative) his attention may be concentrated upon them, and very frequently this will become the source of later conflicts. When these conflicts are centered around dominance, which is unacceptable to him for some reason (perhaps because it had been unsafe), he may find occupations in Group I or some of those in Group VI most satisfactory to him. When the dominance attitude can be incorporated, but personal relations are still important, occupations in Group II may be most suitable, and some of those in Group III. Incorporation of submissive attitudes may lead to subordinate roles in any Group, but perhaps particularly in Group III.*

If, instead of accepting the personal involvement, the child struggles against it, we have the sort of defensive noninterest in persons that appears in some groups (e.g., VI) but with less clarity. This may develop from such situations as early loss of a parent, when turning away from self-involvement with others could be a fairly rational solution for an otherwise unbearable loss. It can also occur in other circumstances.

If a child becomes concentrated, not upon relations with others, but upon himself, whether through overconcern of his parents for his body, or because of the possession of special abilities which capture his and his companions' attentions, he may develop the narcissistic attitudes which are so characteristic of persons in Group VIII occupations. It may also be noted that, at least among painters, a very frequent problem is the existence of nearly classical oedipus conflicts, which would have some relation to these narcissistic attitudes, and which seem to occur with much less frequency in other Groups, although there is only negative evidence here.

* I have no good evidence for this speculation, so it is relegated to a footnote. Perhaps the interest in detail that seems related to clerical interests, if not quite the same thing, and that appears particularly in factorizations of women's interests, is another derivative of this or a similar situation. It could come about as a partial attempt to get away from personal emotional involvement, when the individual was not free enough or wanted badly enough to get away to form the clear object-orientation referred to before. The association with sex may reflect the same factors involved in the greater incidence of mechanical interests in males. For whatever reason, a personal orientation is easier for females than for males, and easier for females than a nonpersonal one.

It is suggested that these emotional situations are effective in implementing the development of certain specific interests and attitudes rather than of others, and that they may also be of real importance in the developing of special abilities as well. Certainly some basic capacity must be present, but this could be so minimal as to be fairly generalized. That is, we could postulate a general plasticity, dependent perhaps upon so direct a thing as the number of neurones genetically present, with its expression directed by emotional needs into particular channels and realized finally as what we have termed special abilities and interests.

THERAPY

The implications for therapy are fairly obvious. Perhaps two are most important. The first is the suggestion that more attention be paid to the role of the occupation in the life of the individual, and that manipulation of the occupational situation may result in great and far-reaching changes in individual adaptation. Presumably, in therapy which has been effective, any necessary manipulations of the occupational situation will eventually be done by the patient. It is suggested that it might be possible to achieve as great a change in the end, and more rapidly, by reversing the situation.

The second major suggestion is that the goals of therapy require further consideration. Occupational studies would indicate that socially and personally adequate modes of living are more varied than present therapeutic goals would indicate.

SOCIETY

There are several implications for the structure of the "good society." The most obvious and perhaps the most important is the absolute necessity for social health, that appropriate and satisfying occupations be available for all members of the culture. With the increase of mechanization, so that more and more of the dull and distasteful jobs can be removed from personal work, this is not an impossible ideal. Those which inevitably will remain could be differently apportioned, or rotated in some way.

It is to be noted that the work is specified as appropriate. This means appropriate not only to the individual but also to society. The same specification applies to the word satisfying.

The further note that occupations should be available for all applies with particular force to women and to minority groups. At the present time the situation of women, although improving, is still unsatisfying. A great deal could be done in terms of organizing work patterns and opportunities, whether part-time or not, whereby those who are not adequately satisfied with their traditional housewife role may find other outlets, and still not give up this socially necessary role. There is room here for enormous and exciting projects in social experimentation.

Allocation of responsibility for these social changes is not easy. How much is it a function of the schools, how much of other civic institutions, how much of industry to see to it that vocational guidance is available, that education is suited to the needs of an industrial society, and that workers are protected but not overprotected?

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Glossary

ADULT PLACEMENT TEST (ANDERSON). Verbal and number scores designed for use for selection and placement in industry, especially of white collar personnel. See R. G. Anderson, *J. appl. Psychol.*, 1947, *31*, 377–388.

ADAMS LEPLEY FIRMNESS AND STABILITY. A personality inventory of emotional adjustment in 9 areas: seriousness, firmness, frankness, tranquility, stability, tolerance, steadiness, persistence, contentment. Science Research Associates.

ALLPORT-VERNON STUDY OF VALUES. S Scale for measuring the dominant interests in personality; 6 scores: theoretical, economic, aesthetic, social, political, religious. Houghton-Mifflin.

AMERICAN COUNCIL ON EDUCATION PSYCHOLOGICAL EXAMINATION FOR COLLEGE FRESHMEN (ACE). Widely used as a college entrance examination, contains two subtests, quantitative and linguistic. Scores for each test and total score. Cooperative Test Division, Educational Testing Service.

ARMY AIR FORCES SELECTION AND CLASSIFICATION BATTERY. See *AAF Aviation Psychology Report,* No. 2. Washington: U. S. Government Printing Office, 1947.

ARMY GENERAL CLASSIFICATION TEST. Designed as a measure of general learning ability. Three types of problems: vocabulary, arithmetic work problems, and block counting. Civilian edition, Science Research Associates.

BAKER-DETROIT ADJUSTMENT INVENTORY (BETA). A self-administering inventory of personal and social conduct for junior and senior high school students. Public School Publishing Co.

BARR SCALE RATINGS OF OCCUPATIONAL STATUS. The scale is designed to rate the level of intelligence required for each of 121 representative occupations. Scale values run from 0.00 (hobo) to 20.71 (inventive genius), and were based on the ratings of 20 judges. See L. M. Terman, *Genetic studies of genius,* Vol. 1, pp. 66–72. Stanford, Calif.: Stanford University Press, 1926.

BELL: THE ADJUSTMENT INVENTORY. The adult form has 5 adjustment scores: homes, occupational, health, social, emotional. See H. M. Bell, The Bell Adjustment Inventory, in O. J. Kaplan, *Encyclopedia of vocational guidance.* New York: Philosophical Library, 1948.

BENNETT TEST OF MECHANICAL COMPREHENSION. Test of the ability to understand various kinds of everyday physical and mechanical relationships; 1 form for women and 3 for men at various levels of difficulty. Psychological Corp.

BERNREUTER: THE PERSONALITY INVENTORY. There are 6 scores: neurotic tendency, self-sufficiency, introversion-extroversion, dominance-submission, confidence, and sociability. Stanford University Press.

THE BLACKY PICTURES: A TECHNIQUE FOR THE EXPLORATION OF PERSONALITY DYNAMICS. The object of this test is to discover the degree of oral eroticism, oral sadism, anal sadism, oedipal intensity, masturbation guilt, castration anxiety (males), penis envy (females), positive identification, sibling rivalry, guilt feelings, positive ego ideal, and love-object relations. Test data are cartoons. Psychological Corp.

BROWN PSYCHONEUROTIC INVENTORY. For children between 9 and 14 years of of age. See F. Brown, *J. appl. Psychol.*, 1934, *18*, 566–577.

CALIFORNIA TEST OF PERSONALITY. Scores for self-adjustment and social adjustment. California Test Bureau.

CLEETON VOCATIONAL INTEREST IVENTORY. Grades 9 through college, and adults, with forms for men and women. Items refer to 10 occupational families. McKnight and McKnight, Bloomington, Ill.

CO-OPERATIVE GENERAL CULTURE TEST. A test of achievement in 6 areas: history, social studies, literature, science, fine arts, mathematics. Educational Testing Service.

DETROIT ADVANCED INTELLIGENCE TEST. Grades 9 to 16. Public School Publishing Co.

THE GUILFORD-MARTIN INVENTORY OF FACTORS GAMIN. The factors are: general activity, ascendance-submission, masculinity-femininity, inferiority feelings, nervousness. Sheridan Supply Co.

THE GUILFORD-MARTIN INVENTORY OF FACTORS STDCR. The factors are: social introversion-extroversion, thinking introversion-extroversion, depression, cycloid tendencies, rhathymia. Sheridan Supply Co.

THE GUILFORD-MARTIN PERSONNEL INVENTORY. Three scores: objectivity, agreeableness, cooperativeness. Sheridan Supply Co.

HUMM-WADSWORTH TEMPERAMENT SCALE. An inventory designed to measure Rosanoff's temperament components. Published by D. G. Humm, 157½ N. Kenmore Ave., Los Angeles, Calif.

KUDER PREFERENCE RECORD—PERSONAL. Designed to show the kinds of relations with other people that are preferred by the subject; 5 measures: working with ideas; being active in groups; avoiding conflicts; directing others; and being in familiar and stable situations. Science Research Associates.

KUDER PREFERENCE RECORD—VOCATIONAL. The following interests are covered: outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical. Science Research Associates.

THE KWALWASSER-DYKEMA MUSIC TESTS. These measure: tonal memory, quality discrimination, intensity discrimination, tonal movement, time discrimination, rhythm discrimination, pitch discrimination, melodic taste, pitch imagery, rhythm imagery. Cincinnati: C. A. Gregory Co.

LEWERENZ TESTS IN FUNDAMENTAL ABILITIES OF VISUAL ART. Part I: recognition of proportion; originality of line drawing. Part II: observation of light and shade; knowledge of subject matter vocabulary; visual memory of proportion. Part III: analysis of problems in cylindrical perspective; in parallel perspective; in angular perspective; recognition of color. California Test Bureau.

MACQUARRIE TESTS FOR MECHANICAL ABILITY. Eight scores: tracing, tapping, dotting, copying, location, blocks, pursuit, total. California Test Bureau.

MEIER ART JUDGMENT TEST. Test of aesthetic judgment. The subject indicates preference for an unaltered reproduction or a modified version. Bureau of Educational Research and Service, State University of Iowa.

MICHIGAN VOCABULARY PROFILE TEST. An information test of interests. World Book Co.

MINNESOTA CLERICAL TEST. Two subtests: number-checking and names checking. Psychological Corp.

MINNESOTA MULTIPHASIC PERSONALITY INVENTORY (MMPI). A personality inventory designed to measure all aspects of personality bearing on psychiatric diagnosis. The test is scored for 9 reaction patterns: hypochondriasis, depression, hysteria, psychopathic deviation, masculinity-femininity, paranoia, psychasthenia, schizophrenia, and hypomania. Other scores are: question, lie, validity, and a suppressor variable. University of Minnesota Press.

MINNESOTA PAPER FORM BOARD. A multiple-choice test of assembled geometric figures. Psychological Corp.

MINNESOTA PERSONALITY SCALE. An inventory designed to measure: morale, social adjustment, family relations, emotionality, and economic conservatism. Psychological Corp.

MINNESOTA RATE OF MANIPULATION TEST (PEG BOARD). A form board with 60 identical disks. There are turning and placing tests, using the same board. Educational Test Bureau.

MOSS NURSING APTITUDE. George Washington University Series of Nursing Tests. Four parts: aptitude test for nursing; arithmetic test for prospective nurses; reading comprehension test for prospective nurses; general science test for prospective nurses and interest-preference test for prospective nurses. Center for Psychological Service, George Washington University.

MOSS SOCIAL INTELLIGENCE TEST. George Washington University Series, revised form. Six scores: judgment in social situations; recognition of the mental state of the speaker; memory for names and faces; observation of human behavior; sense of humor; total. Center for Psychological Service, George Washington University.

OTIS QUICK-SCORING MENTAL ABILITY TESTS. BETA A. Revision of the Otis S-A to permit more rapid scoring. Beta is for grades 4 to 9. Psychological Corp.

OTIS SELF-ADMINISTERING (S-A) TESTS OF MENTAL ABILITY. Mixed items including verbal, arithmetical, and spatial types. World Book Co.

PINTNER ASPECTS OF PERSONALITY INVENTORY. Elementary and junior high school. World Book Co.

PRESSEY SENIOR CLASSIFICATION TEST.

PRESSEY SENIOR VERIFICATION TEST. Tests of verbal intelligence, or ability to do academic school work. Public School Publishing Co.

PRESSEY X-O TEST FOR INVESTIGATING EMOTIONS. Cincinnati: C. A. Gregory Co.

PRIMARY MENTAL ABILITIES. Subtests include: verbal-meaning, word-fluency, reasoning, memory, number, and space. Science Research Associates.

THE RORSCHACH INKBLOT TEST. A projective personality test. The materials consist of 10 standard inkblots presented sequentially, the examinee telling what each one looks like to him. From this, deductions are made about the structure and functioning of the personality. Grune and Stratton.

SEASHORE MEASURES OF MUSICAL TALENT. Six scores: pitch, loudness, time, timbre, rhythm, tonal memory. Psychological Corp.

SRA YOUTH INVENTORY. Designed to help identify problems that young people worry about. Eight areas: my school, looking ahead; about myself; getting along with others; my home and family; boy meets girl; health; things in general; and a basic difficulty key. Science Research Associates.

STENQUIST MECHANICAL APTITUDE TEST. No. II. Pictures of machines and mechanical processes with questions about their relationships. Stoelting Co.

STRONG VOCATIONAL INTEREST BLANK. An interest inventory with separate forms for men and women. Widely used and studied, with new keys appearing frequently. It can now be scored for about 40 occupations. Stanford University Press.

TERMAN GROUP TESTS OF MENTAL ABILITY. Now Terman-McNemar Test of Mental Ability. Seven subtests: information, synonyms, logical selection, classification, analogies, opposites, best answer. World Book Co.

TERMAN-MILES MASCULINITY-FEMININITY TEST. Designed to indicate the position of an individual on a continuum from extreme masculinity to extreme femininity. McGraw-Hill.

THEMATIC APPERCEPTION TEST. A projective test utilizing pictures for each of which the subject tells a story. These are interpreted according to various schemes, but usually in terms of needs or strivings. Harvard University Press.

THURSTONE TEMPERAMENT SCHEDULE. Seven scores: active, vigorous, impulsive, dominant, stable, sociable, reflective. Science Research Associates.

VINELAND SOCIAL MATURITY SCALE. Measures of maturation, from birth to maturity. The functions tested are: self-help, self-direction, locomotion, occupation, communication, and social relations. Educational Test Bureau.

WESMAN PERSONNEL CLASSIFICATION TEST. A test of mental ability used in the selection of employees for clerical, sales, supervisory, and managerial positions. Verbal and numerical scores, and total score. Psychological Corp.

WILLOUGHBY EMOTIONAL MATURITY SCALE. Designed to indicate the degree of freedom from childish emotional attitudes and motives. Stanford University Press.

WONDERLIC PERSONNEL TEST. An omnibus intelligence test for candidates for clerical, sales, and supervisory positions. Psychological Corp.

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